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THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

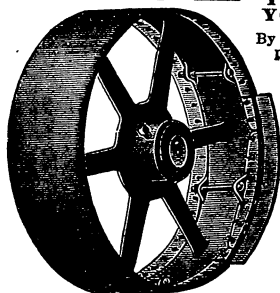
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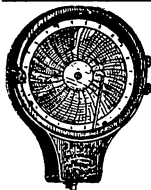
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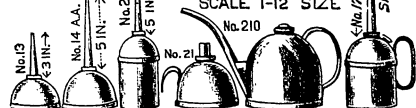
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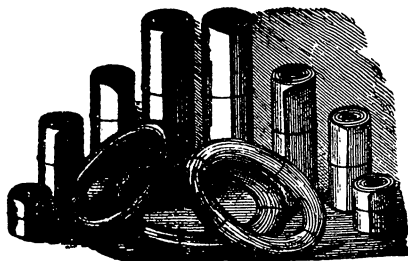
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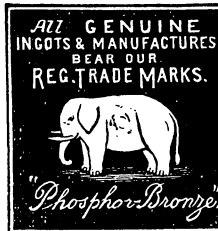
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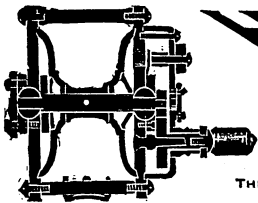
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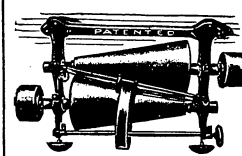
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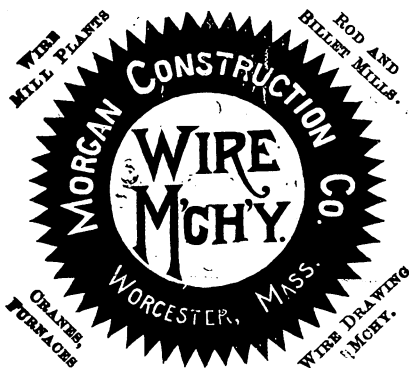
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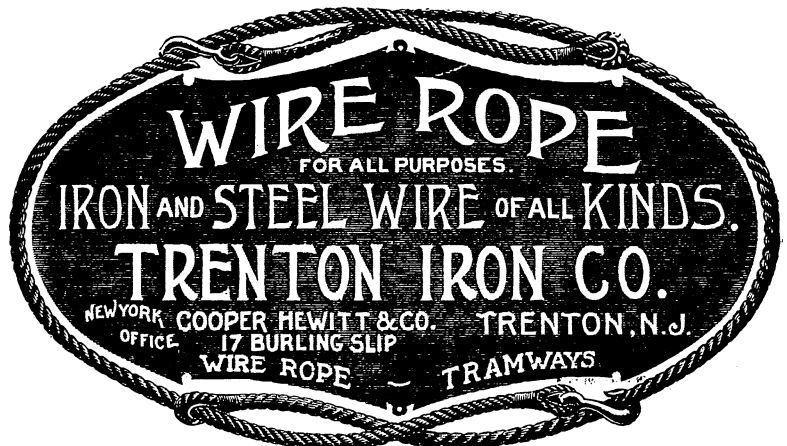
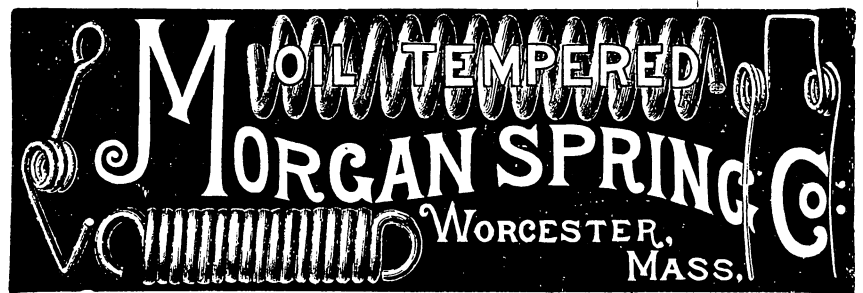
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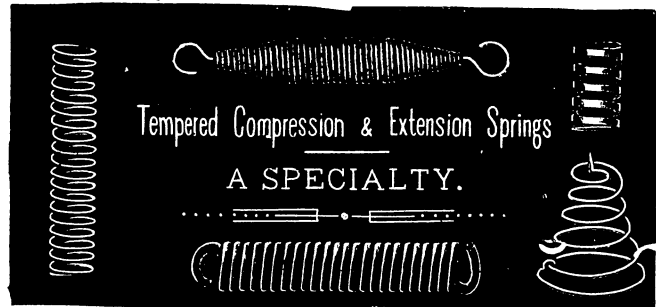


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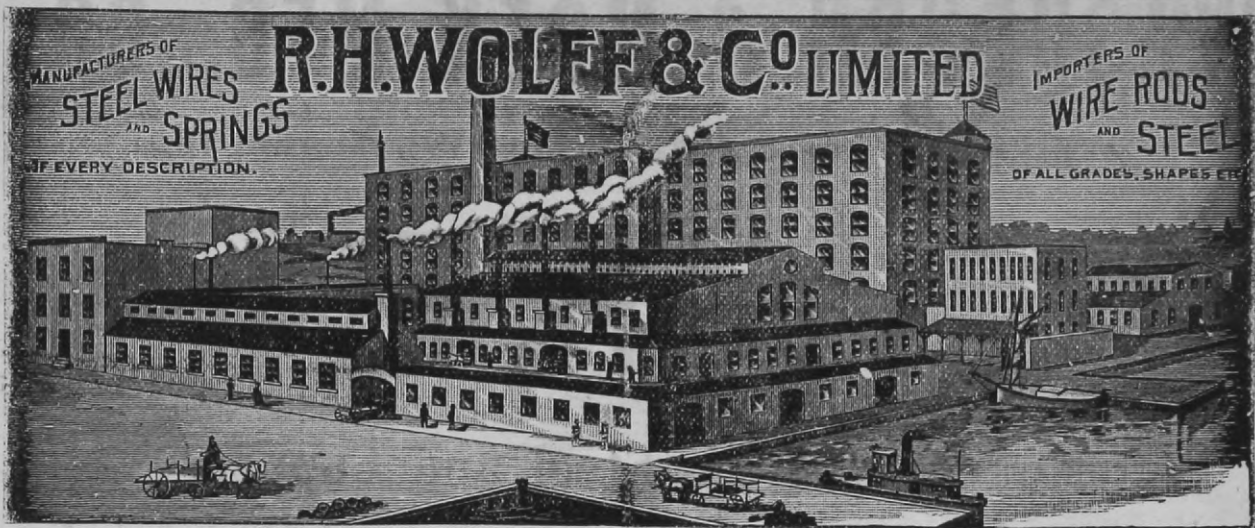
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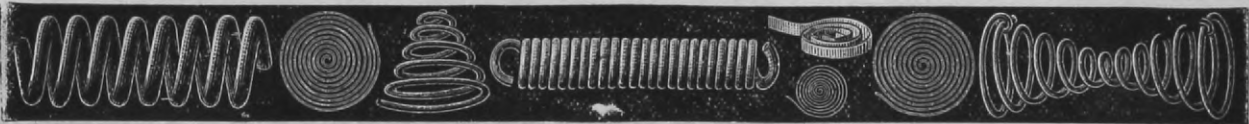
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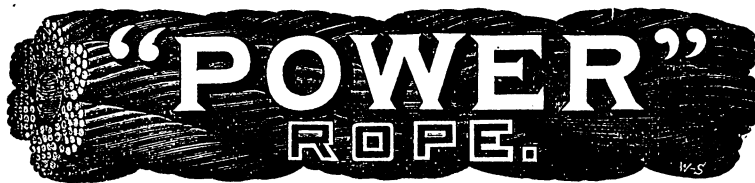
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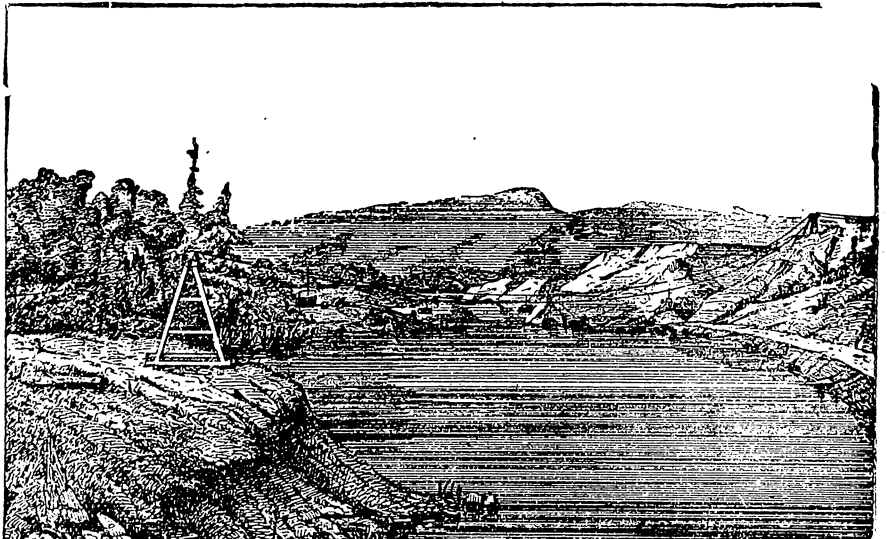
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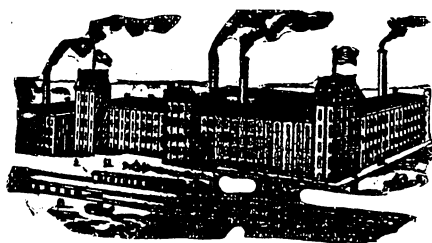
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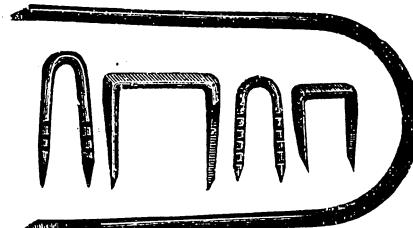
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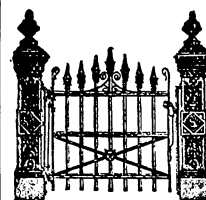
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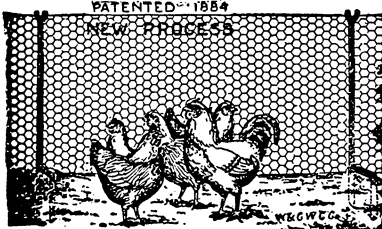
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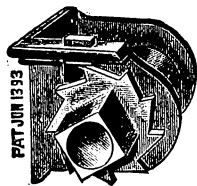
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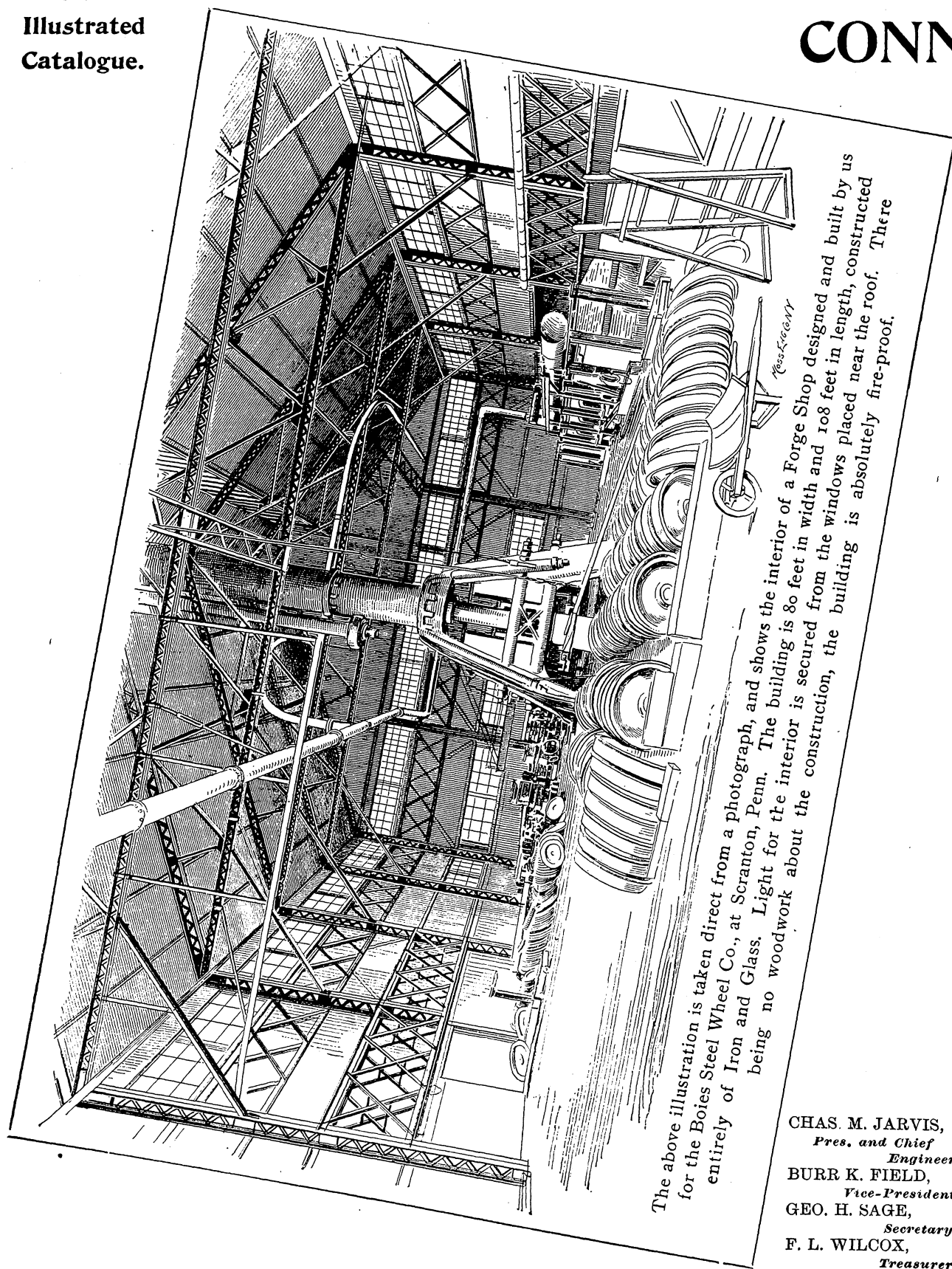
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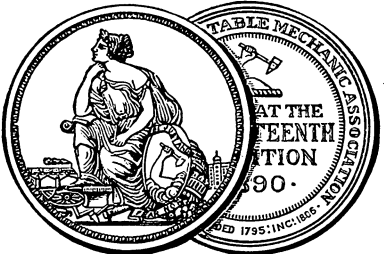
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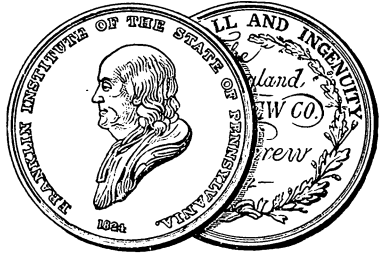
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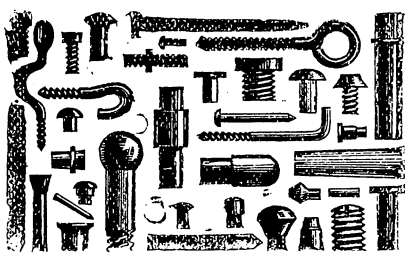
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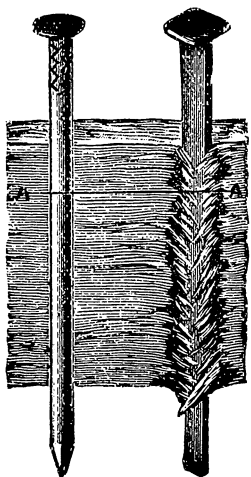
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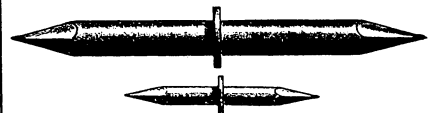
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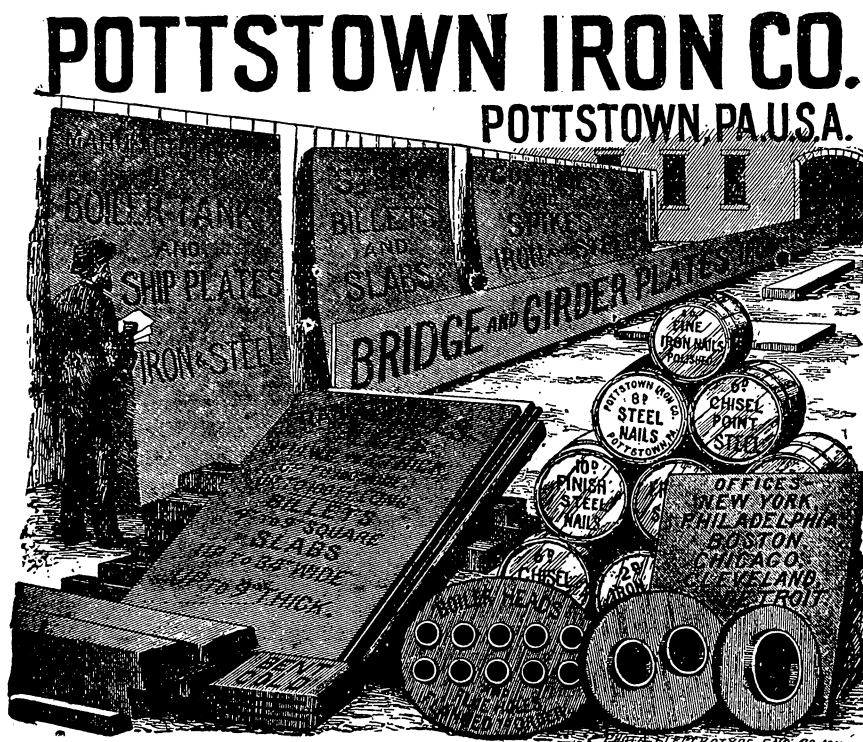
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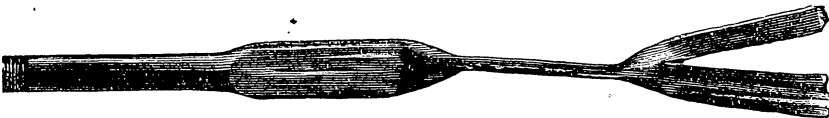
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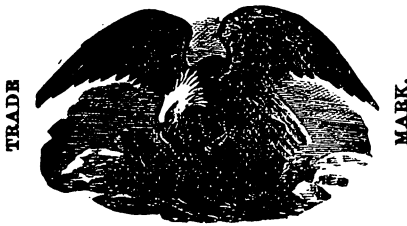
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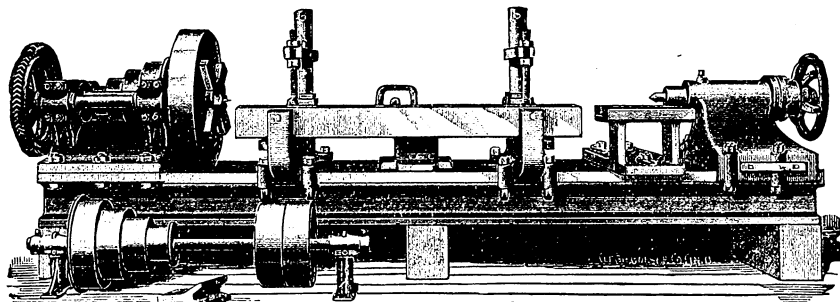
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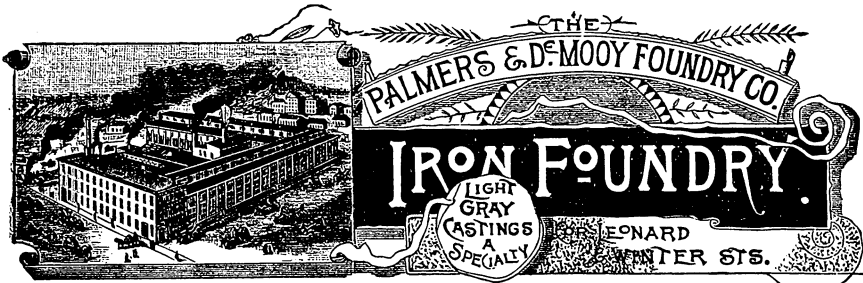
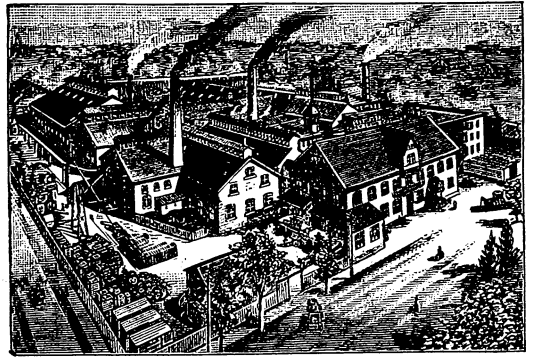
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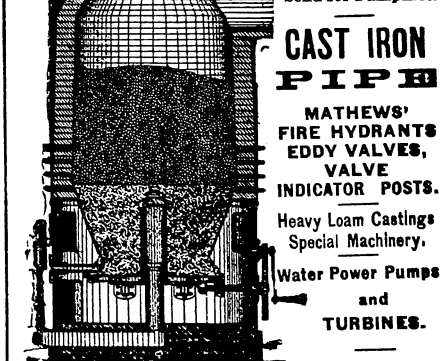
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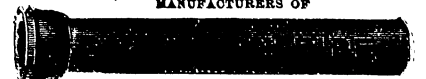
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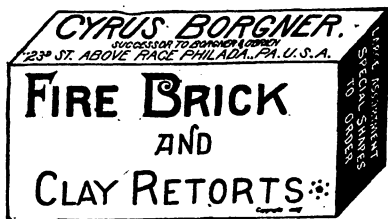
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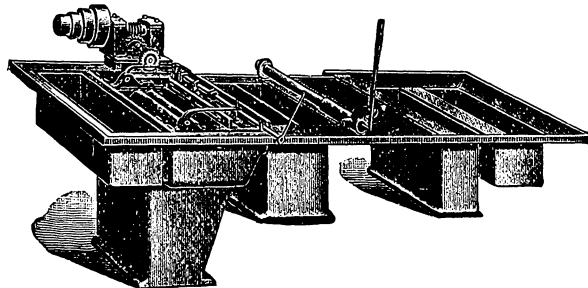
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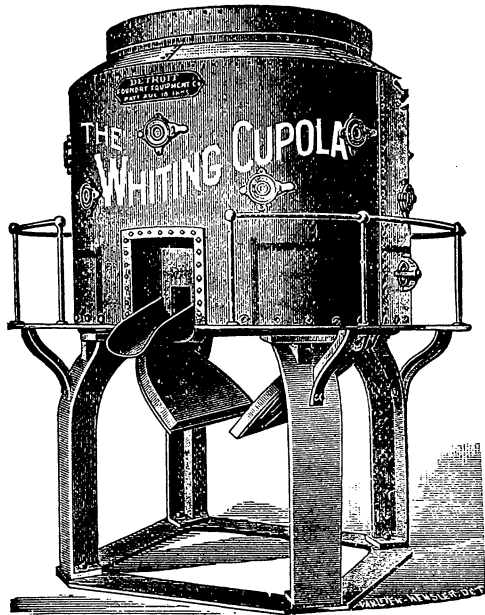
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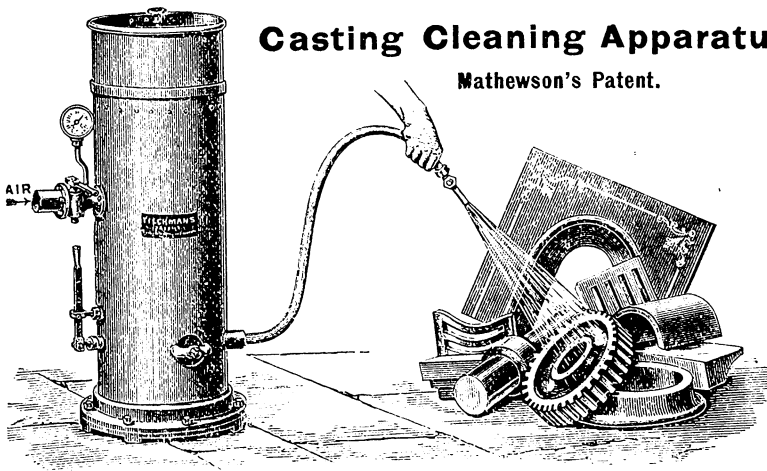
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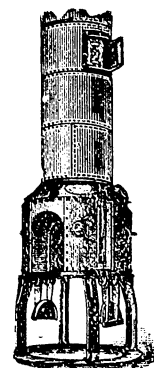
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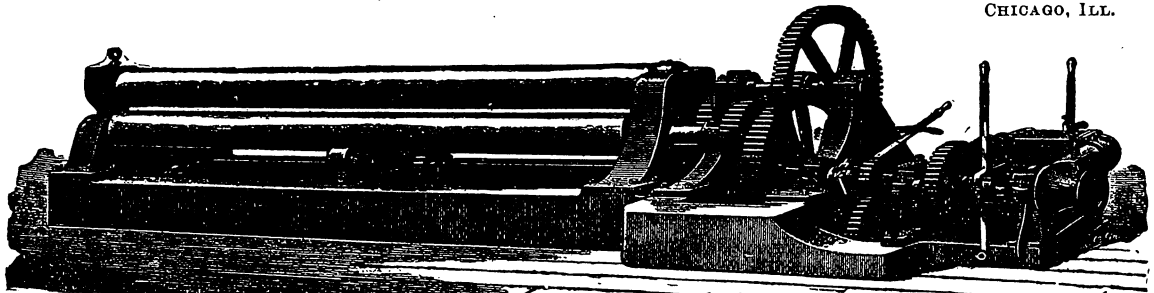
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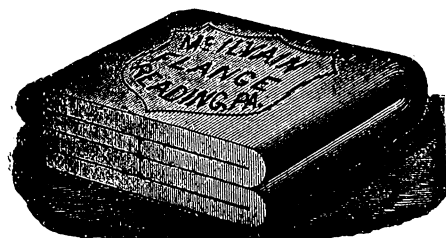
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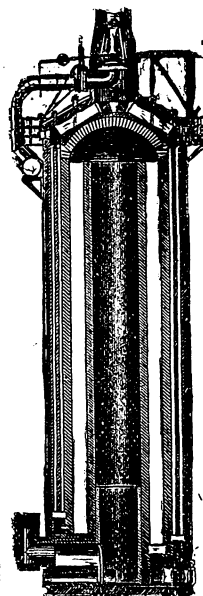
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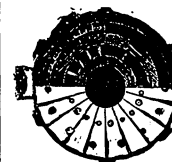
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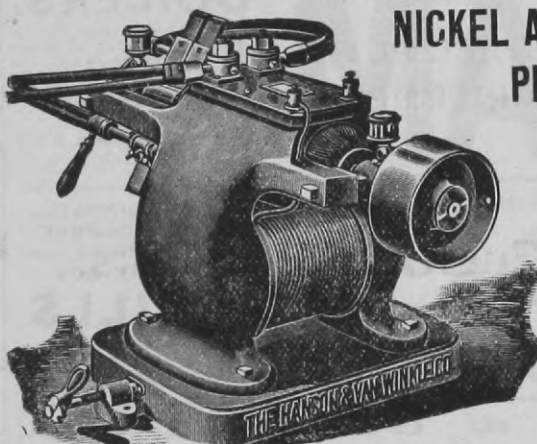
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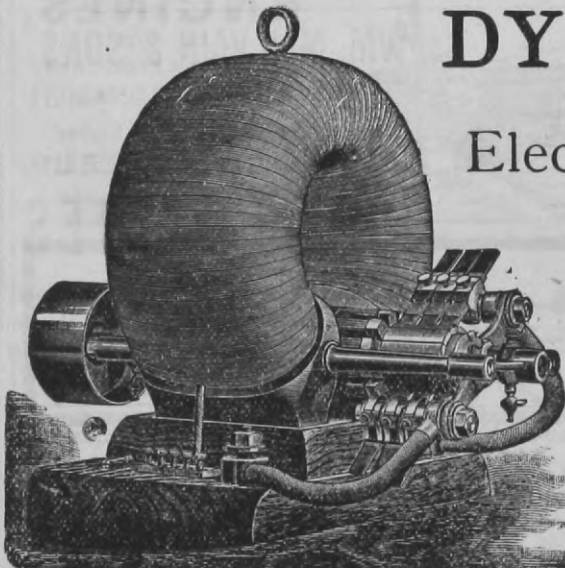
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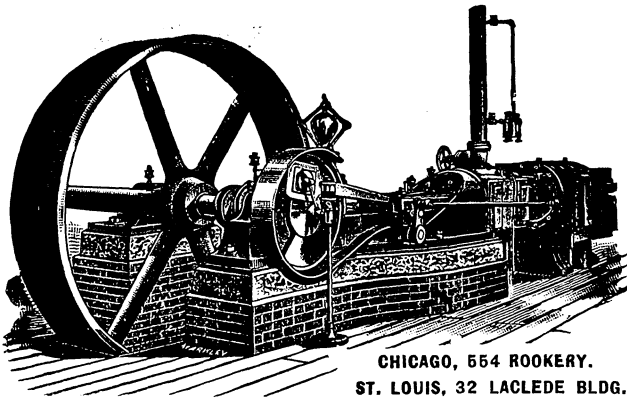
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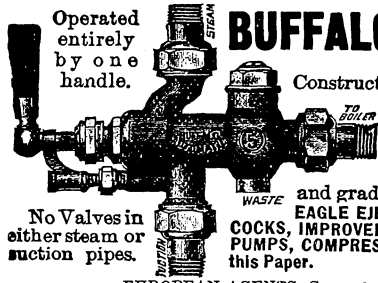
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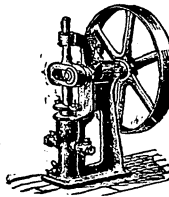
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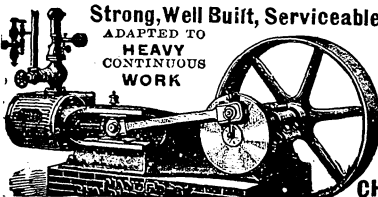
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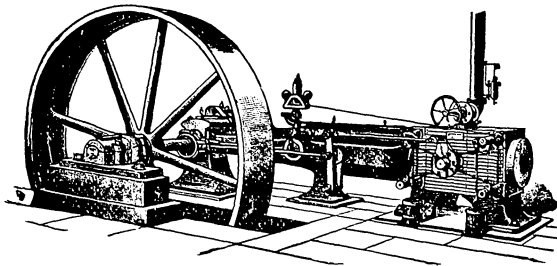
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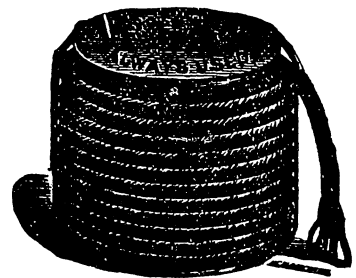
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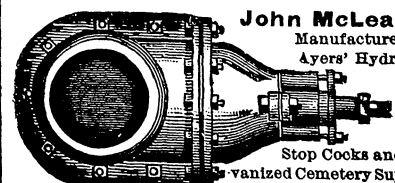
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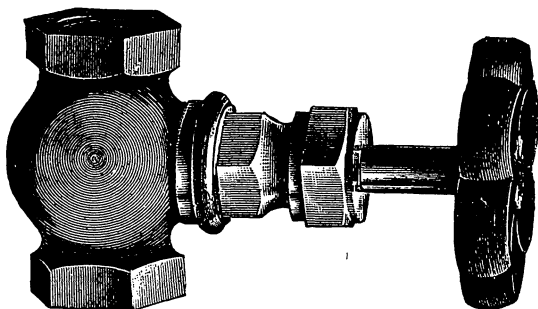
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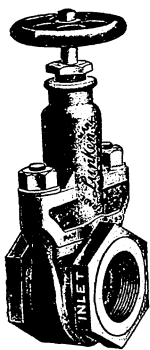
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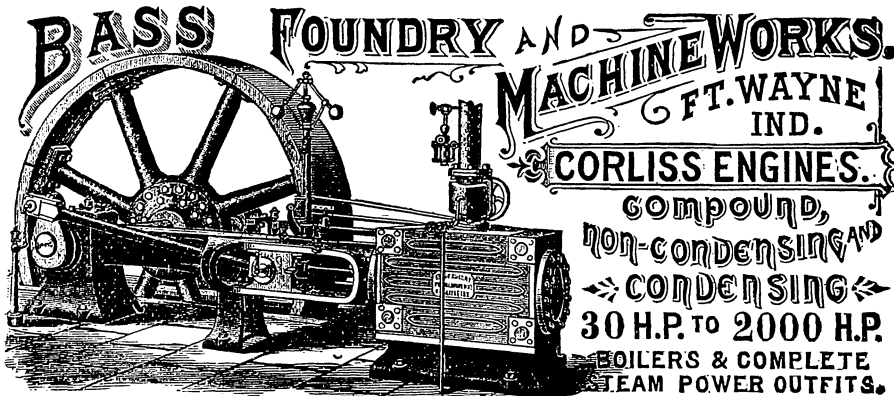
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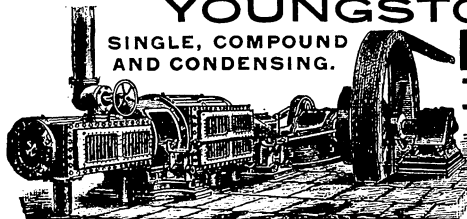


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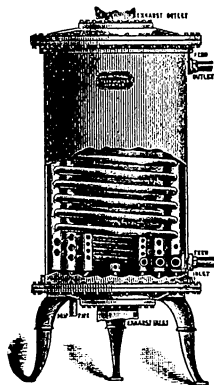
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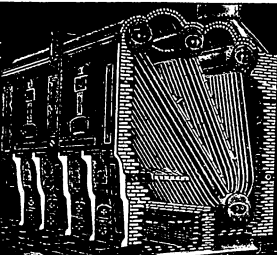
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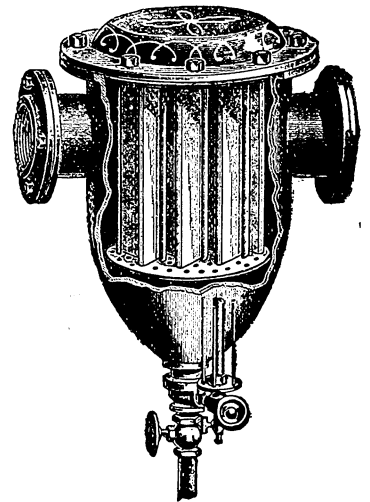
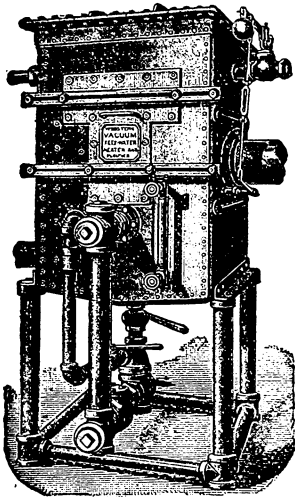
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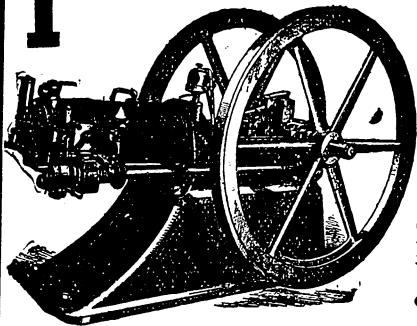
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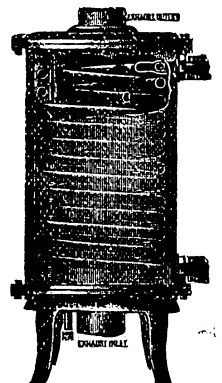
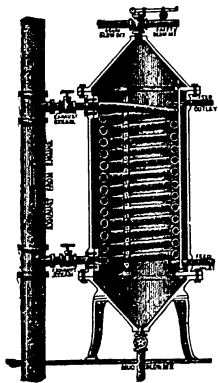
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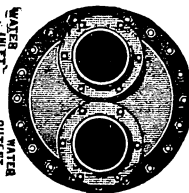
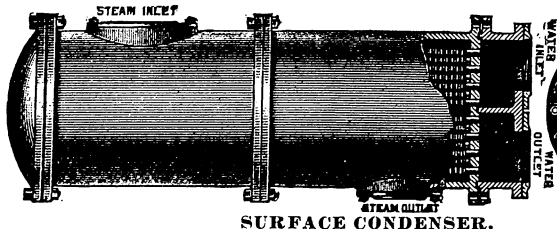
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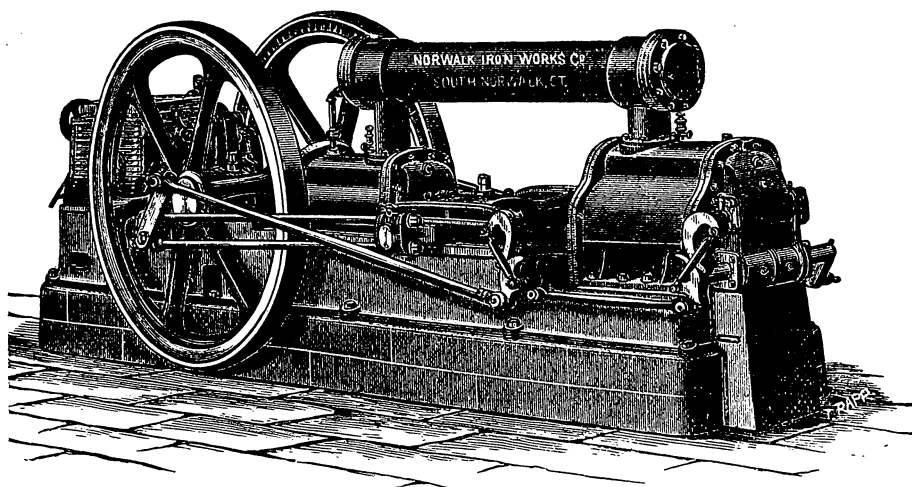
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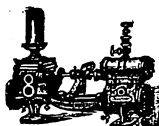
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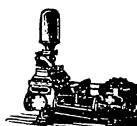
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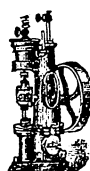
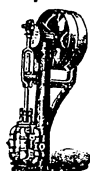
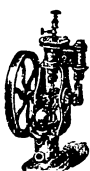
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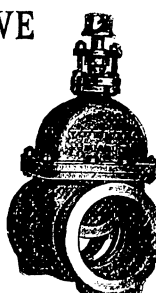
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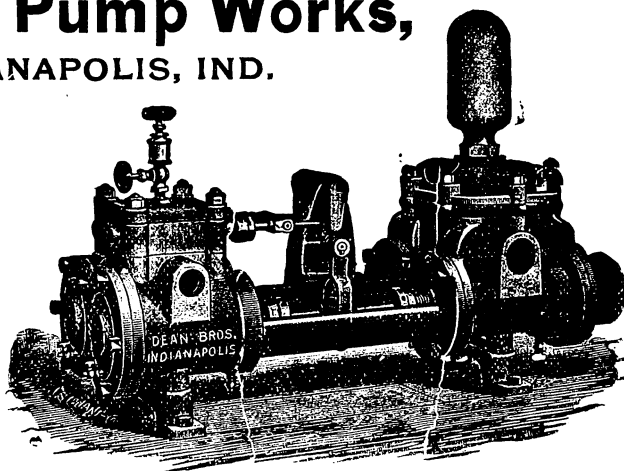
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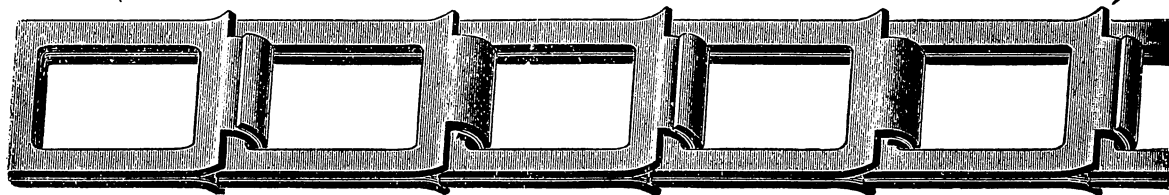
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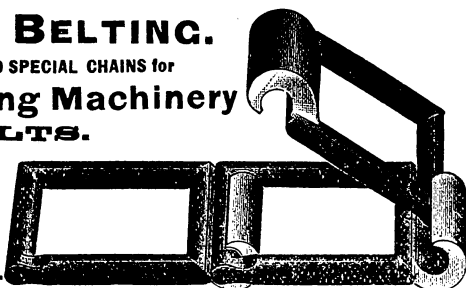
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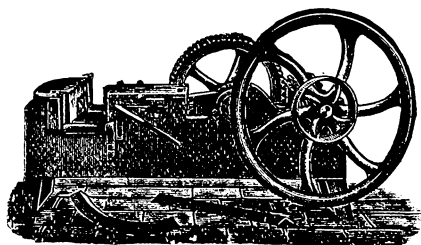
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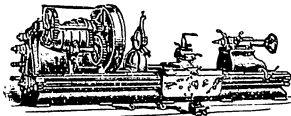
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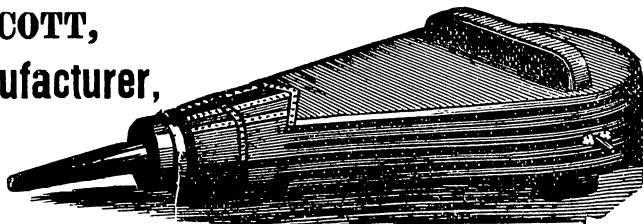
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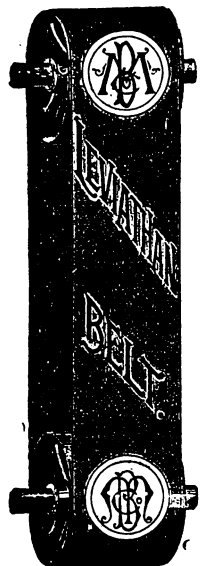
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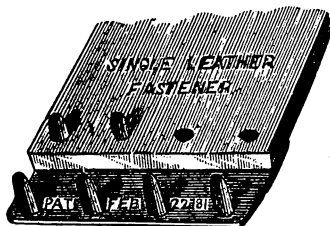
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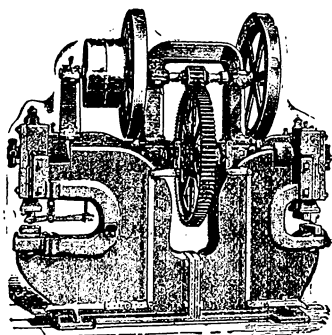
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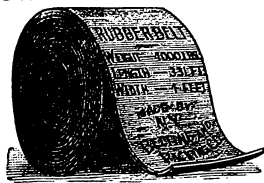
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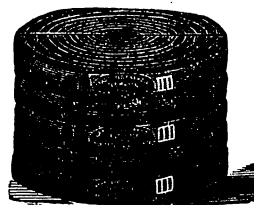
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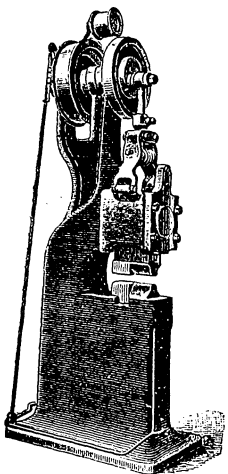
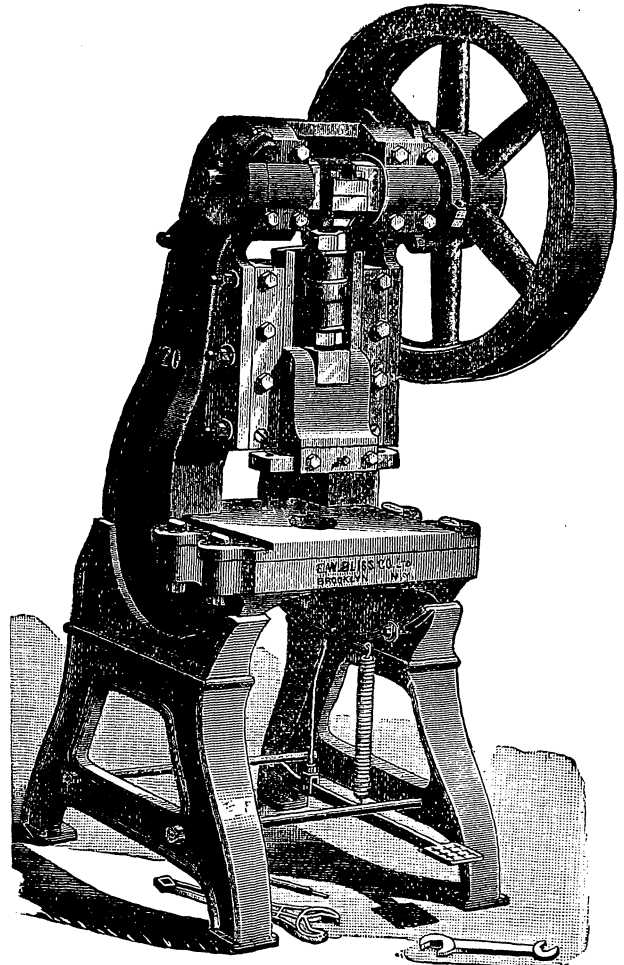
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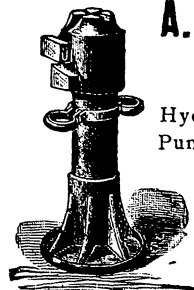
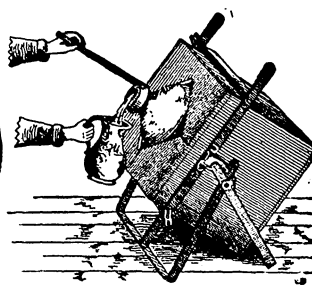
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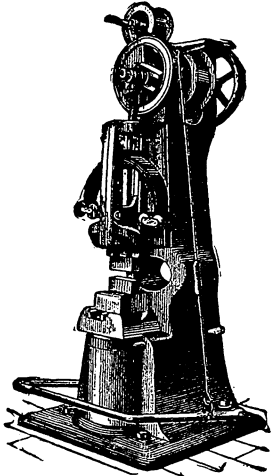
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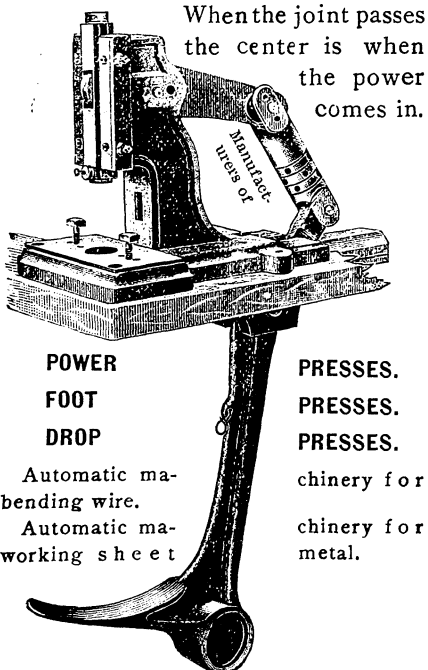
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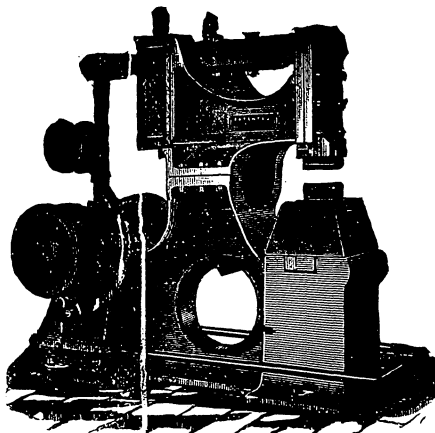
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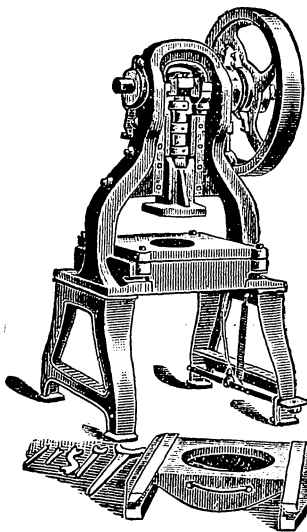
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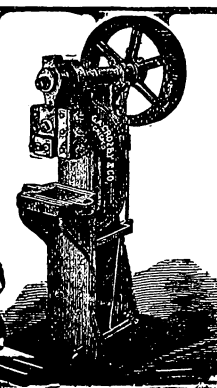
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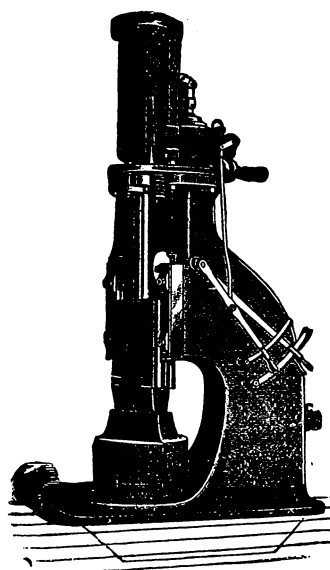


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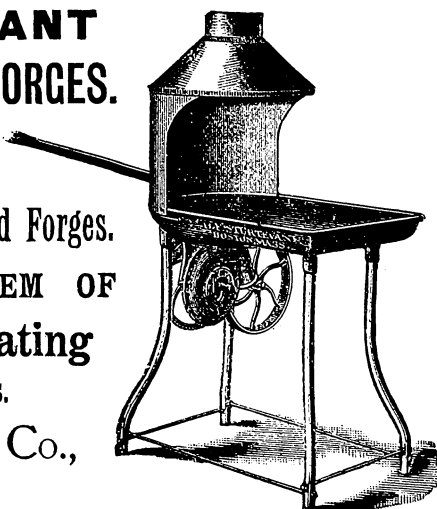
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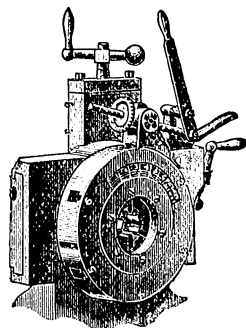
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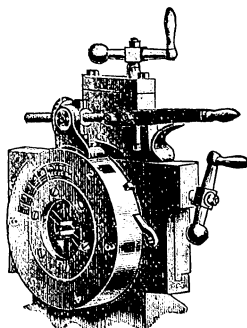
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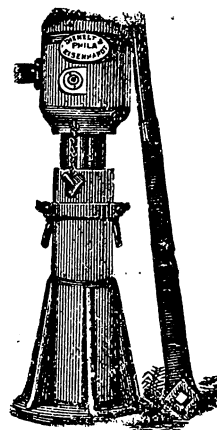
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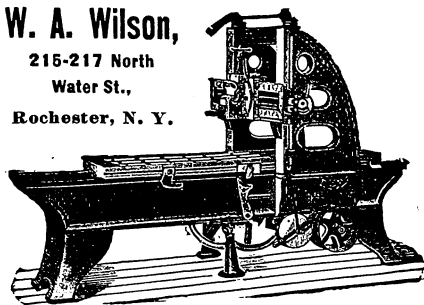
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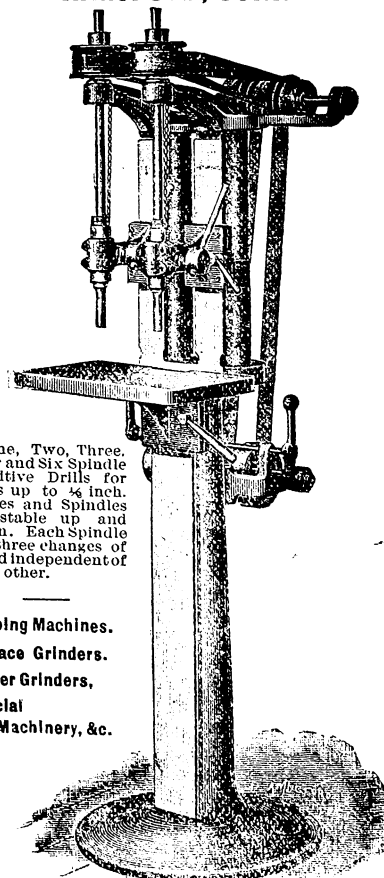
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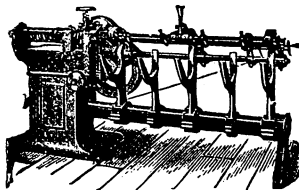
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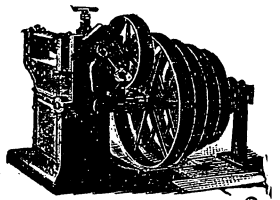
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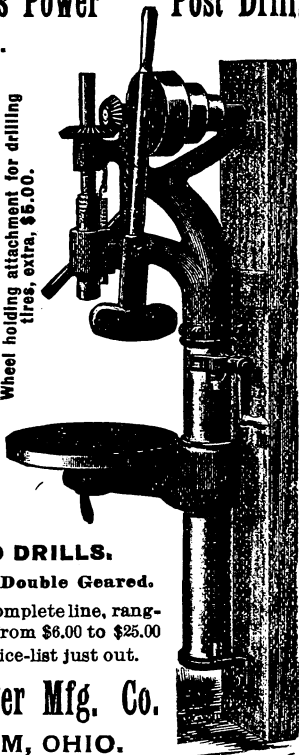
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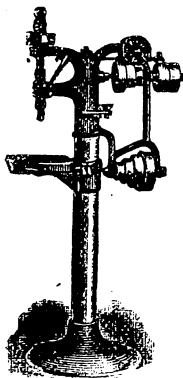
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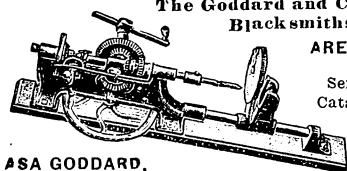
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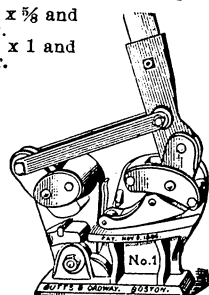
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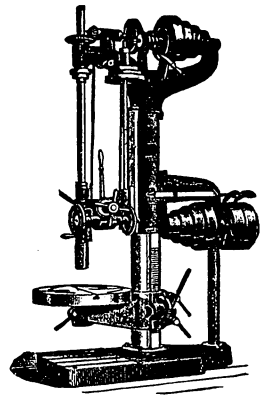
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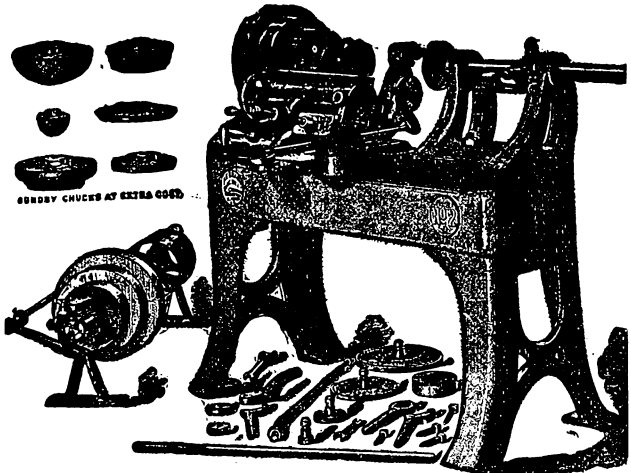
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**FERRACUTE MACHINE CO., BRIDGETON, N. J., U. S. A.,**

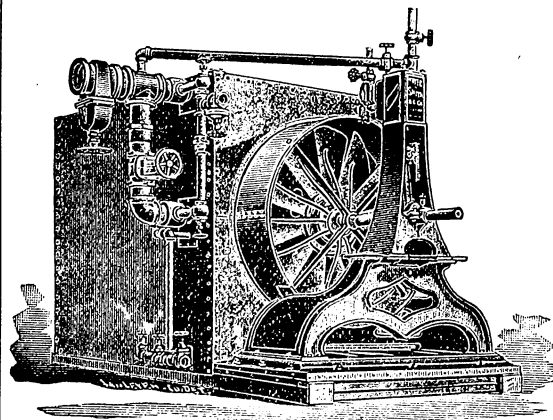
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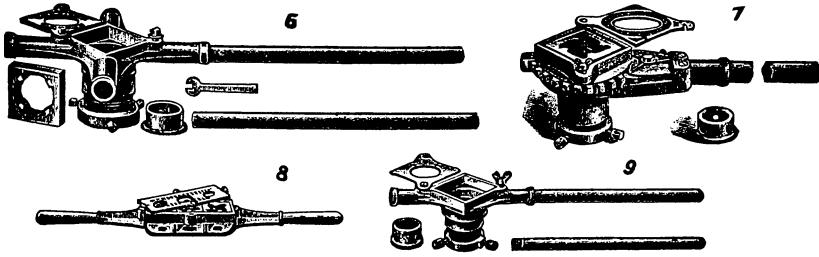
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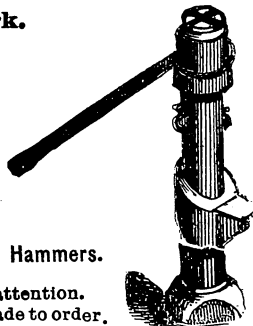
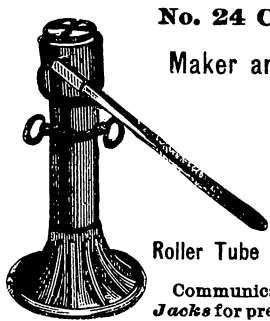
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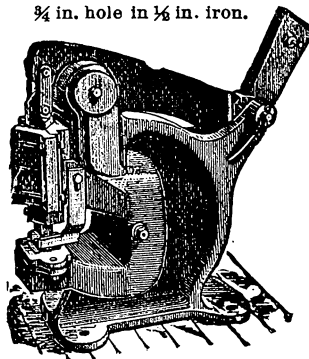
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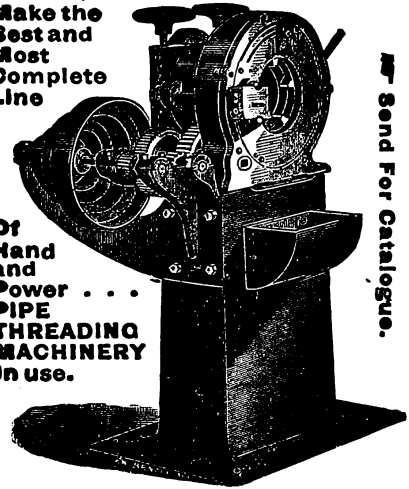
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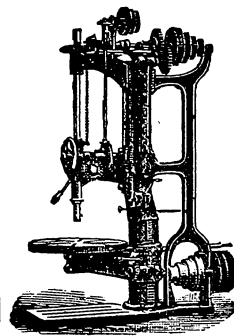
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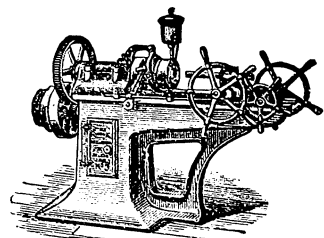
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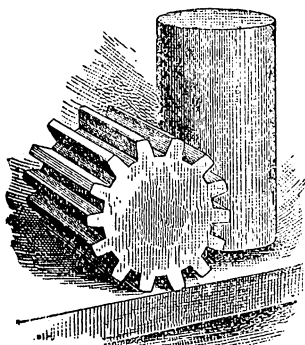
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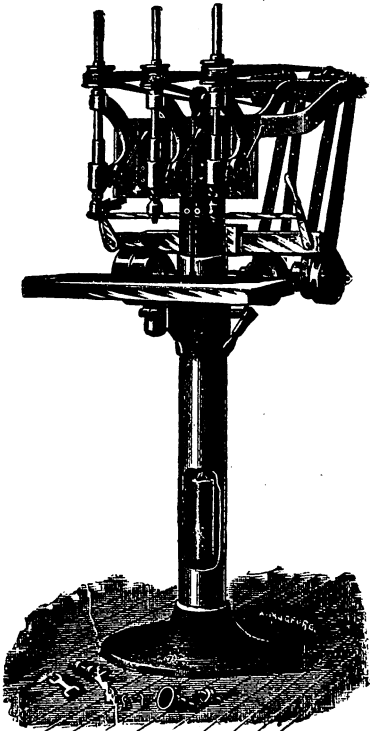
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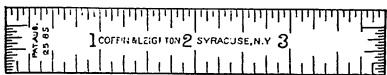


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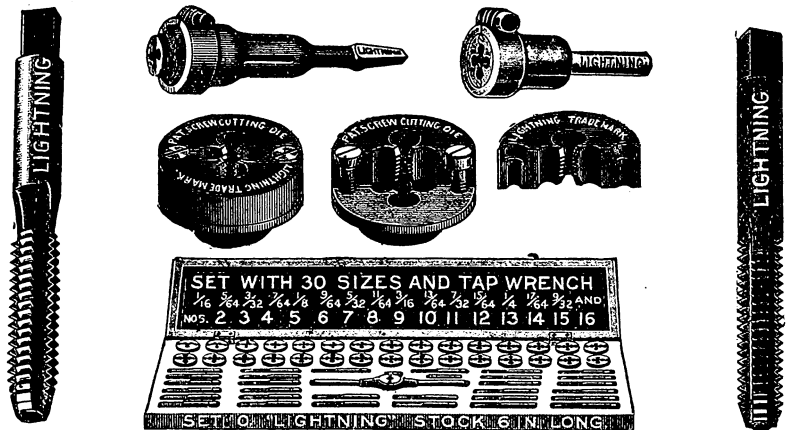
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Two "Points" about it—only 2 (There are plenty more, but we only mention these two here.)

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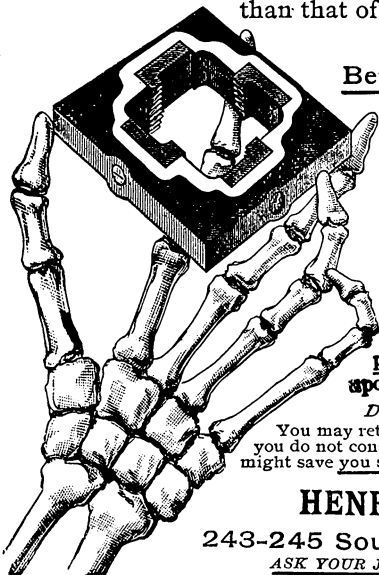
2

Before it becomes dull from use it will cut as many perfect threads as the best solid die extant, and when it is dull, you don't throw it away and buy a new one—Oh, no! You simply sharpen the cutters on a common grindstone, and so make it practically as good as it was at first, and this sharpening process may be repeated a number of times.

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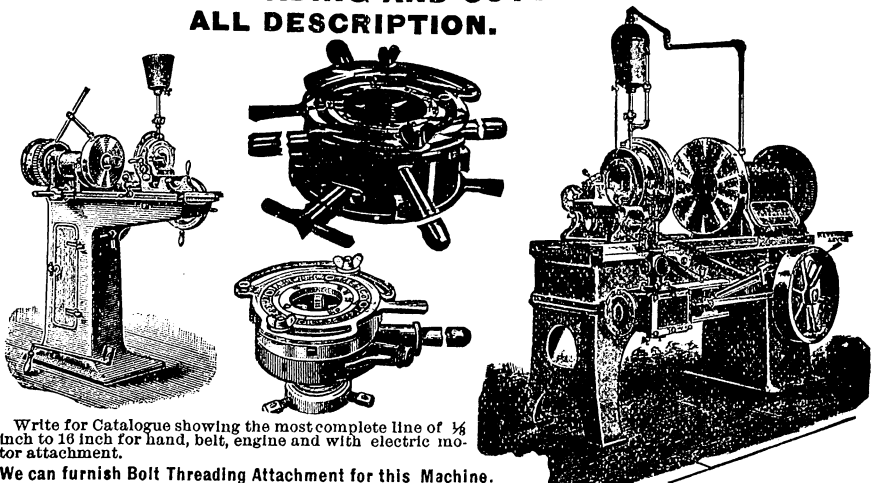
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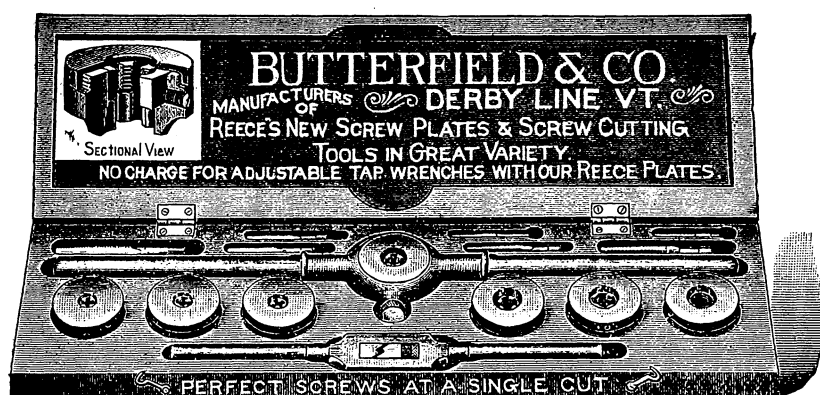
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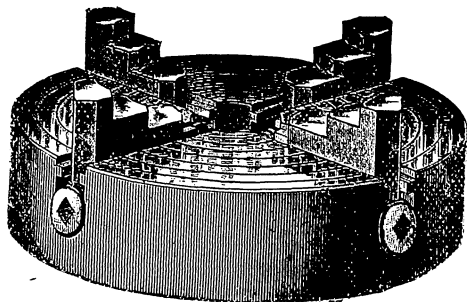
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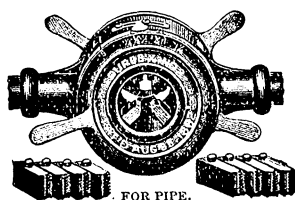
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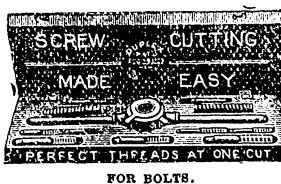
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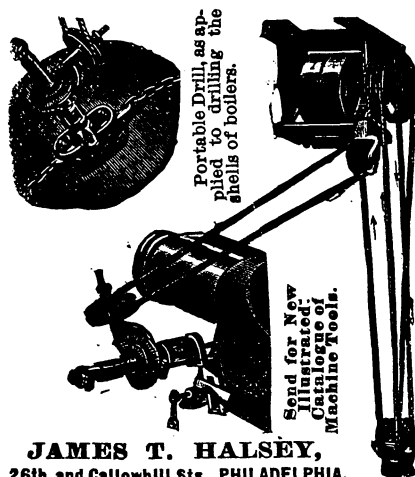
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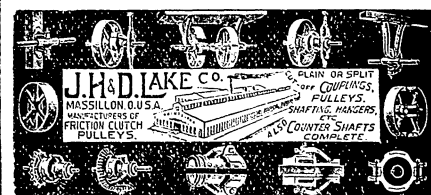
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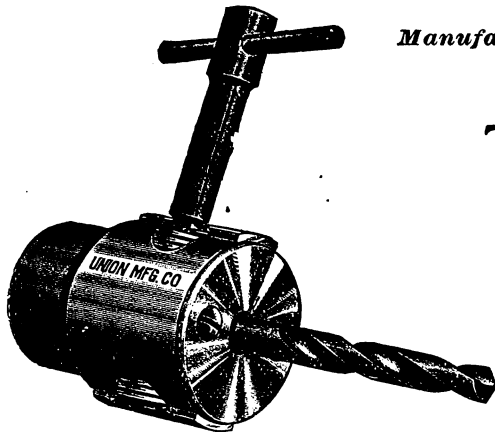
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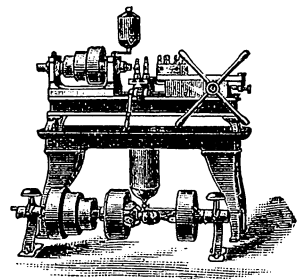
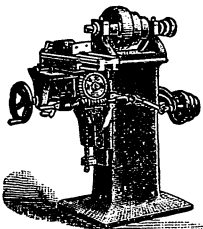
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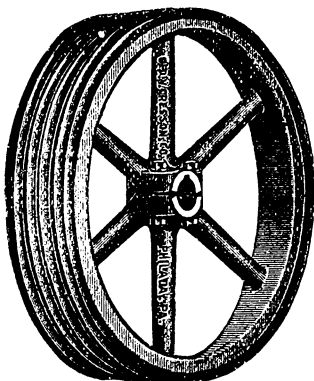
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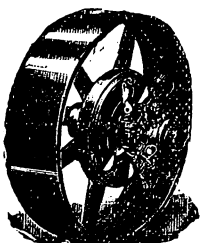
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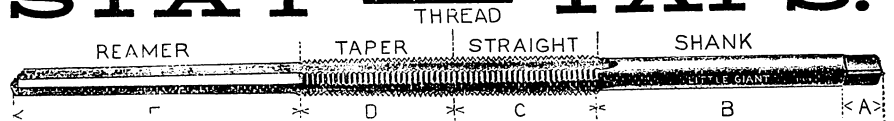


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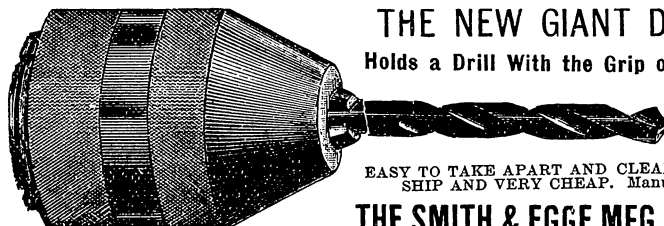
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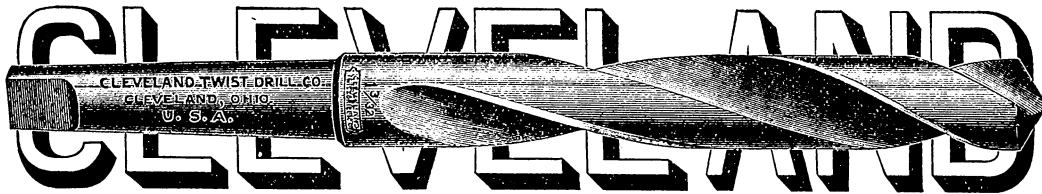
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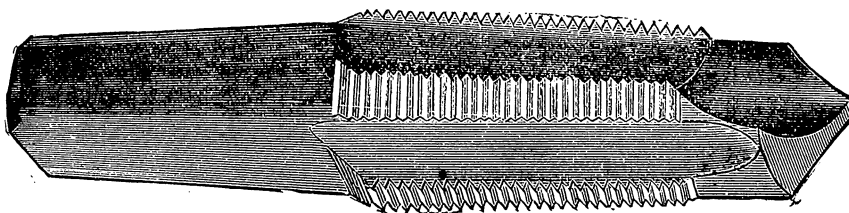
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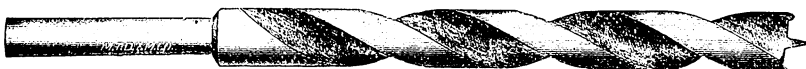


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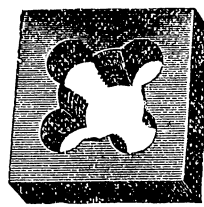
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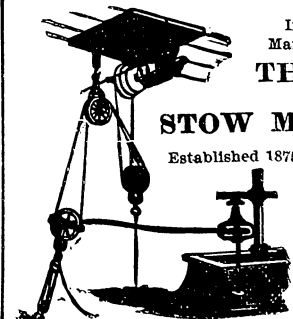
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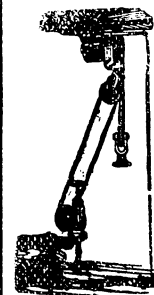


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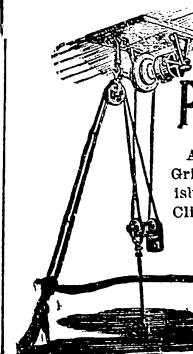
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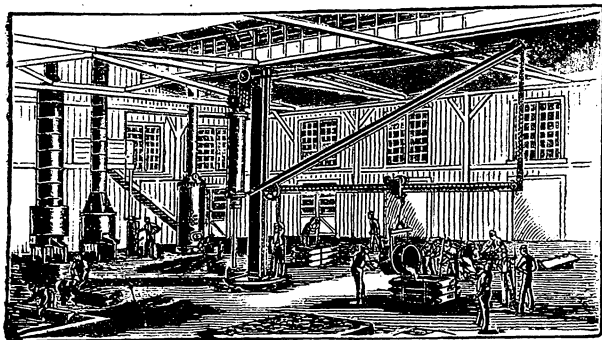
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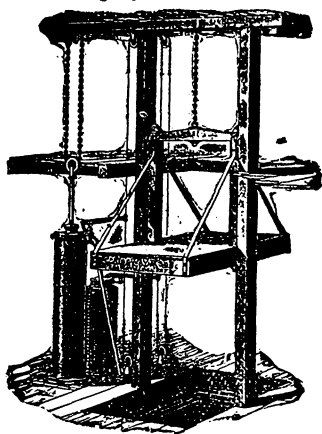
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Steam-Hydraulic Elevator.

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Not Costly.

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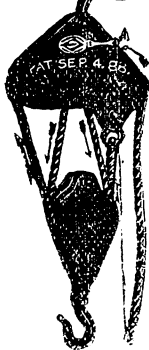
DEAR SIR: Replying to your favor of the 2d, we have been using one of the Ridgway Balanced Steam-Hydraulic Cranes for about 15 months. It is a 7-ton crane which we are using on the main floor of our foundry. Our molders and foreman are very much pleased with the crane. It is quick, easy to handle and nothing about it can get out of order. The writer had some experience with this crane when he was with Penna. Steel Co. at Steelton, Pa., and it was on account of the good work done there that one was put in our foundry here. For such duty as foundry work or similar work around shop or yard there is no better crane in the market.

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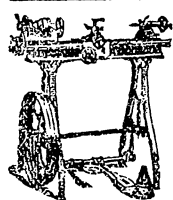
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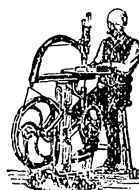
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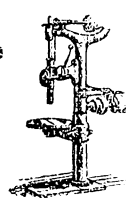
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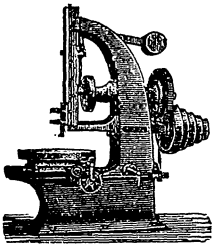


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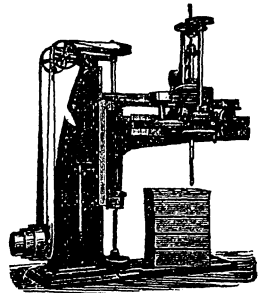
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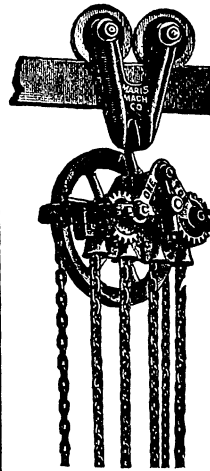
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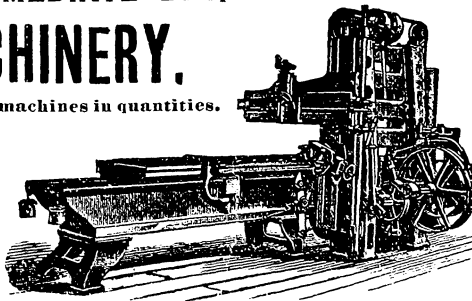
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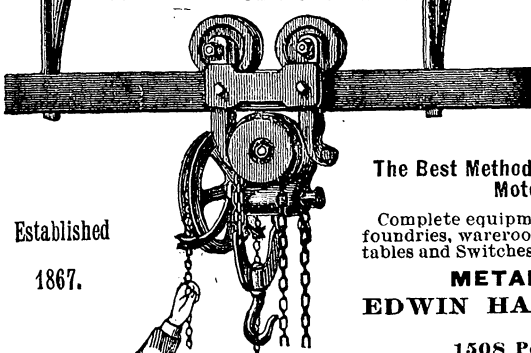
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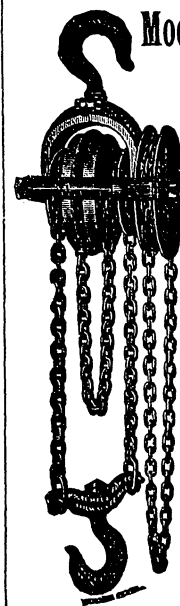
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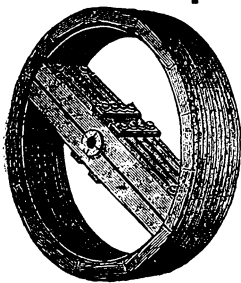
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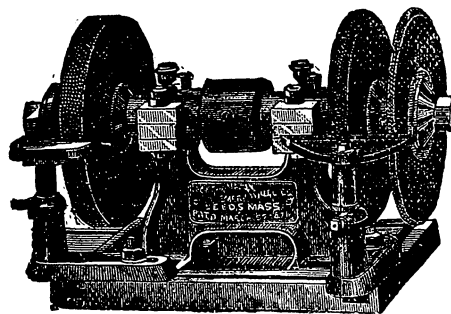
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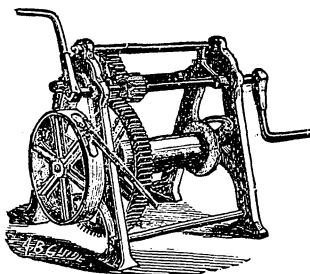
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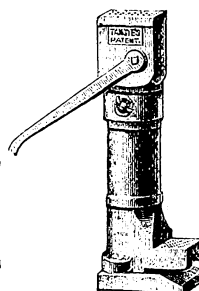
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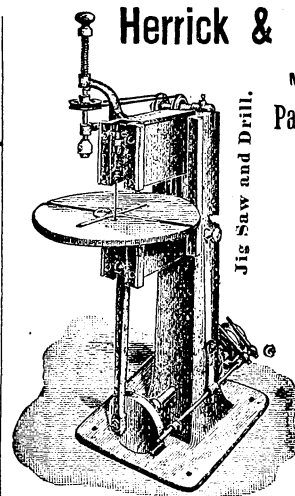
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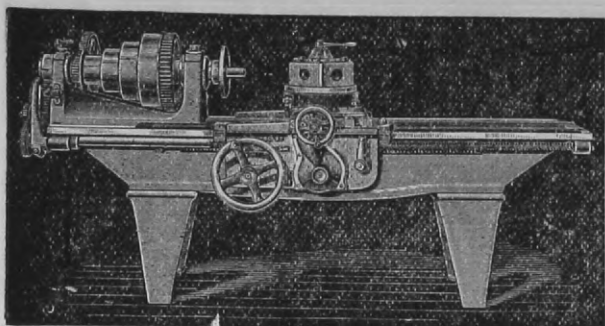
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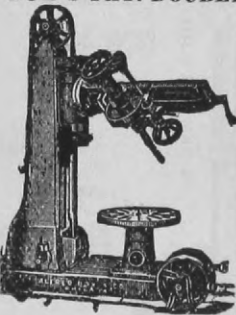
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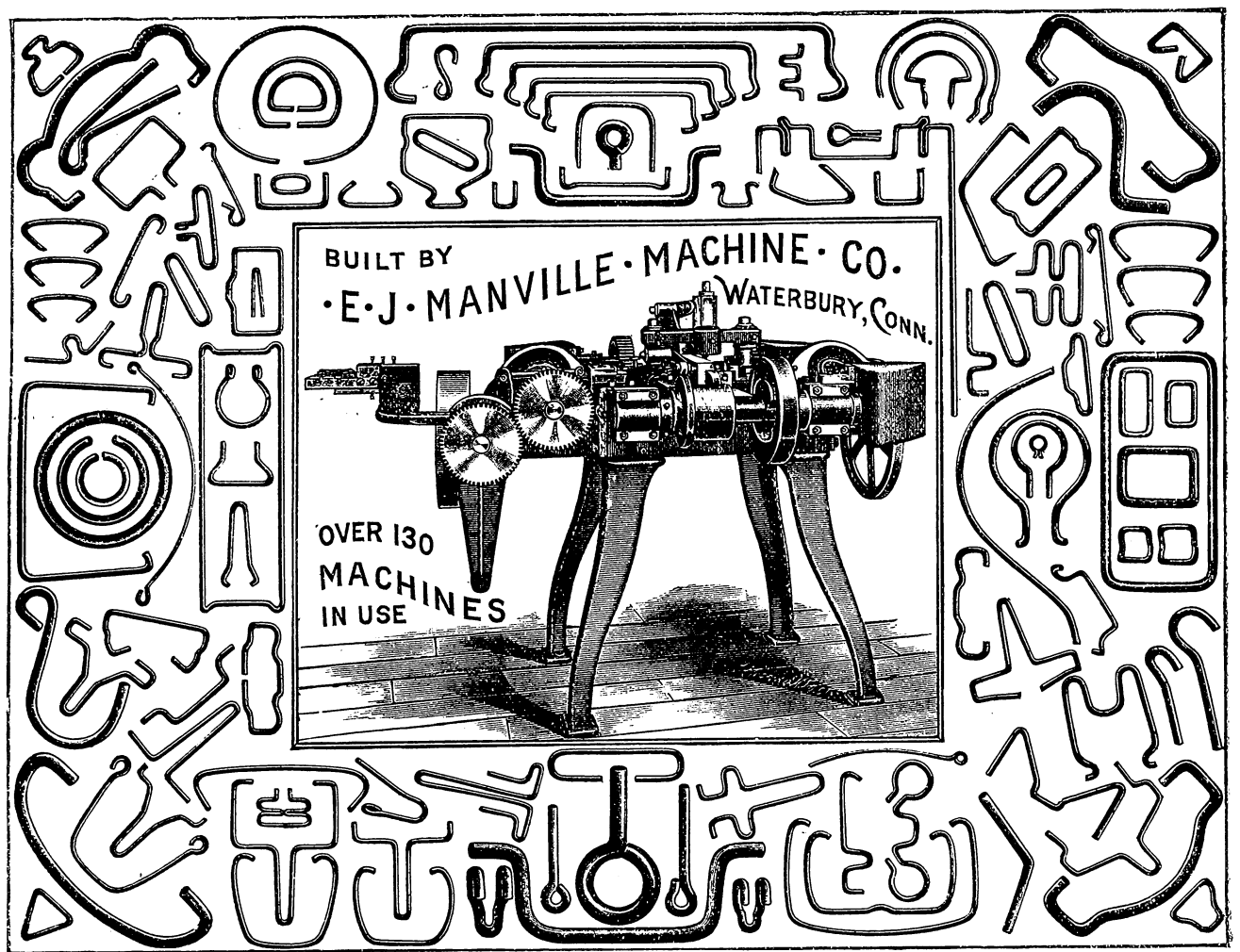
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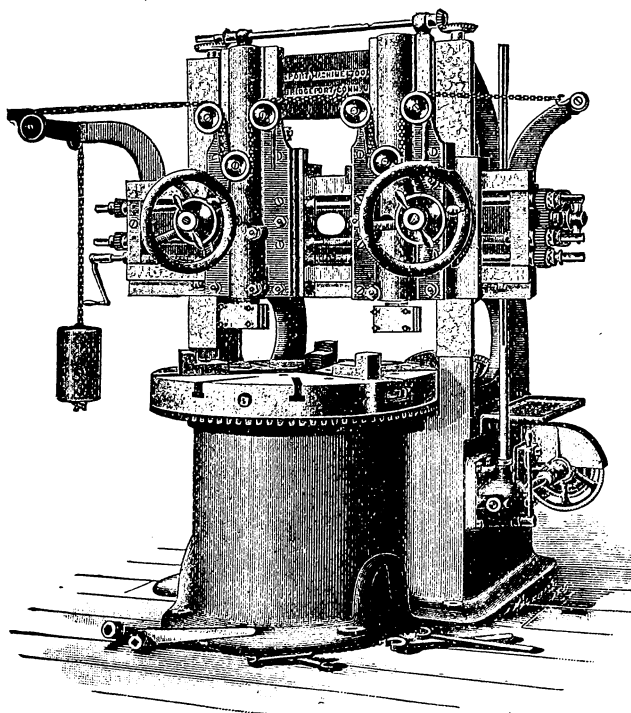
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1 New Haven 28 x 8 " "
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24 x 48 Miller & Allen Corliss Engine.
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1 15 in. x 5 ft. Jones & Lamson.
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1700 tons Johnson Girder Rails, 38, 48, 52 and 66 lb. Rails.

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National Bolt Cutter, Double Head. Engine Lathe, 16 in. or 30 in. swing, Hollow Spindles.

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30 ft. 2 7/8 in. Shafting.

Back Geared Drill Press, 26 in. or 30 in. Table.

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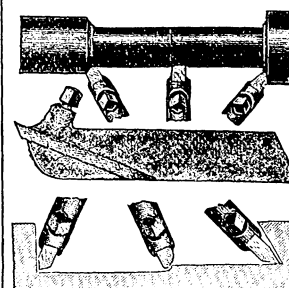
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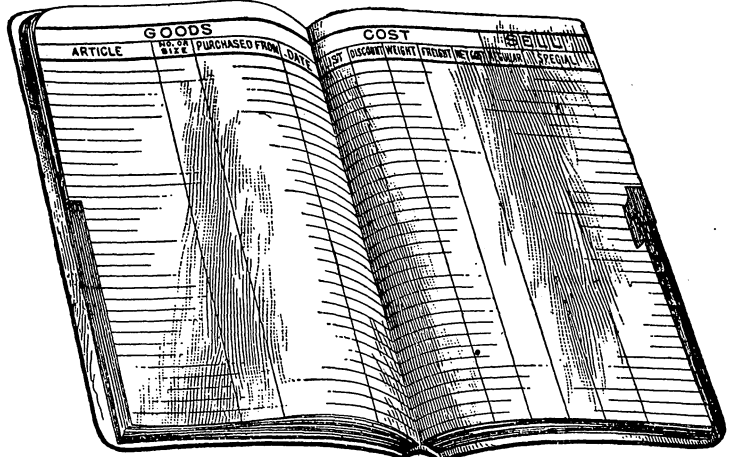
These Books are printed on paper of superior quality and bound in grain seal leather.

Columns are provided for the name and number or size, for noting from whom purchased, date of quotation or purchase, list and discount, and for entering freight expenses as an element of cost. Under the heading of selling prices, the regular and any special price, or remarks in regard to the goods are given place. This book goes into considerable detail in describing the goods and cost prices. It has been arranged in accordance with the views of many Hardwaremen whose methods are careful and exact.

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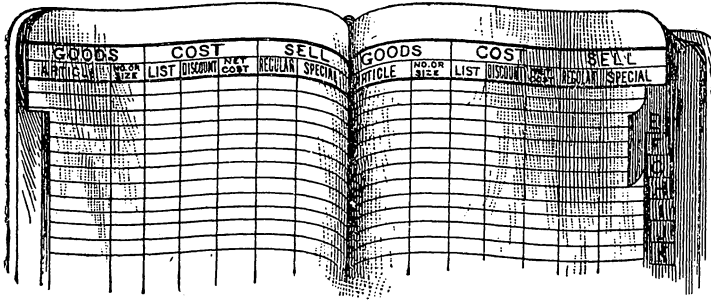
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In this book each page is complete, and the record of prices does not, as in Book A, run across two pages. Thus it accommodates a larger range of goods with much less detail in the record. It is adapted for office or store use, and by the use of familiar abbreviations, sufficiently large for the convenient and concise record of prices.

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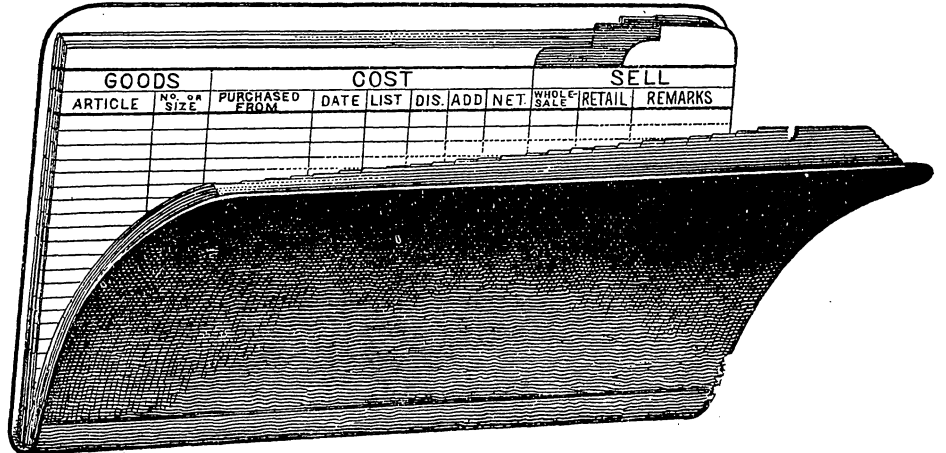
Hardware Price Book B.

The headings in Book C run across the top, in a line parallel with the hinge. In this way a very complete record can be kept on a single page. The details of weight and freight contained in Book A are omitted, and a single column headed "Add" given for the insertion of freight or other expenses which it is desirable to include in the cost. Under the selling prices space is left for the wholesale price, the retail price, and also for any remarks in regard to cost of the goods, desirability of pushing them, or other matters.

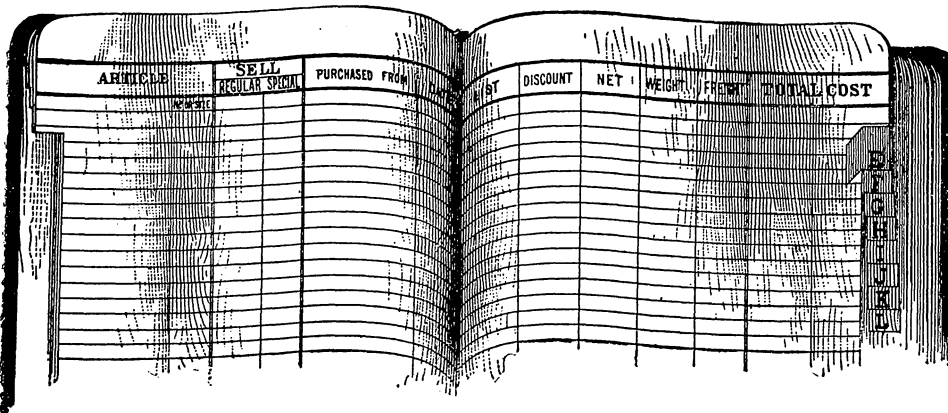
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Hardware Price Book C.



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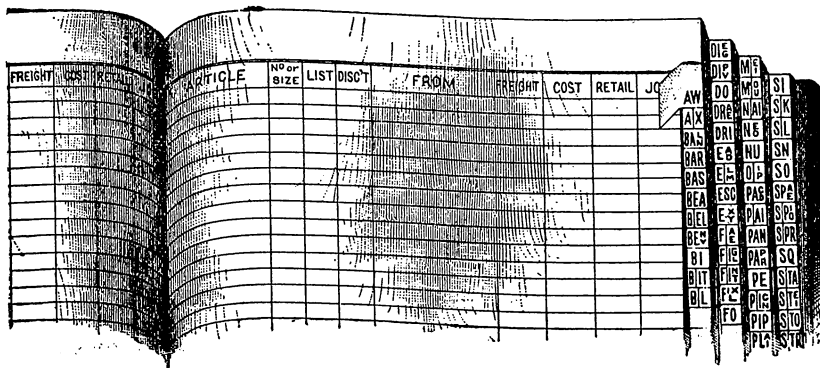
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Price Book D will recommend itself particularly for desk and store use, and for salesmen on the road.

The name of the article, its number or size and the selling price are the first to meet the eye on the left-hand page, as embodying information desired when the selling price is required. The other headings follow in convenient order, by which a detailed memorandum regarding the goods may be kept, the whole being seen at a glance. A number of pages at the back of the book are arranged for memoranda, which will be found a great convenience. This arrangement is adapted to the requirements of the trade in this direction.

The Iron Age Hardware Price Book F.

WITH MULTIPLE INDEX (Patent Pending).



AD	DI _E	MF	SI
AN	DI _V	MO	SK
AU	DO	NAI	SL
AW	DR _E	N _O	SN
AX	DRI	NU	SO
BA _N	E _D	O _P	SP _E
BAR	E _M	PA _C	SP _O
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Sufficient space has been provided for large lines of goods such as Axes, Bits, Springs, etc., by allowing four pages to such indices, instead of two pages, as for lines of goods requiring less space. This is accomplished, as in AX for example, in Book F by having a short tab with the letter A on the tab on the first leaf, and AX on the tab on the second leaf. The A on the first leaf is directly over the A on the lower leaf, so that the index reads AX whether looking at both leaves together, or at the lower one only.

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For Augers,	turn to	AU	For Chisels,	turn to	CH	For Iron,	turn to	IRO
" Parers, Apple	"	PA _R	" Cutlery,	"	CUT	" Irons,	"	IR'S
" Saws,	"	SAW	" Cartridges,	"	CAR	" Shovels,	"	SH _O
" Pumps,	"	PUM	" Rules,	"	RUP	" Grindstones,	"	GRI
" Bits,	"	BIT	" Locks,	"	LO	" Stones,	"	STO

Special care has been taken to make the classification as indicated in the index correct and comprehensive, making provision for all Hardware articles and giving sufficient space for the keeping and recording of prices. It is thought that every strictly Hardware article has its first two or three letters given, thus permitting immediate reference to it by a single motion.

It is, however, obvious if any articles are not directly designated by the index characters, that the index, being alphabetical in its arrangement, indicates the place where quotations on such articles should be recorded. The supplement, however, may be found useful for quotations on any outside goods which the Hardwareman may desire to keep prices on, while at the same time it may be used if necessary for any overflow of matter from the preceding pages, or to contain list prices or other matter relating to goods.

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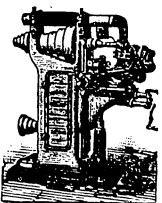


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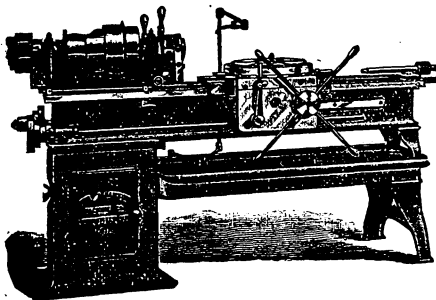
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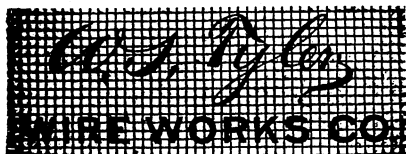
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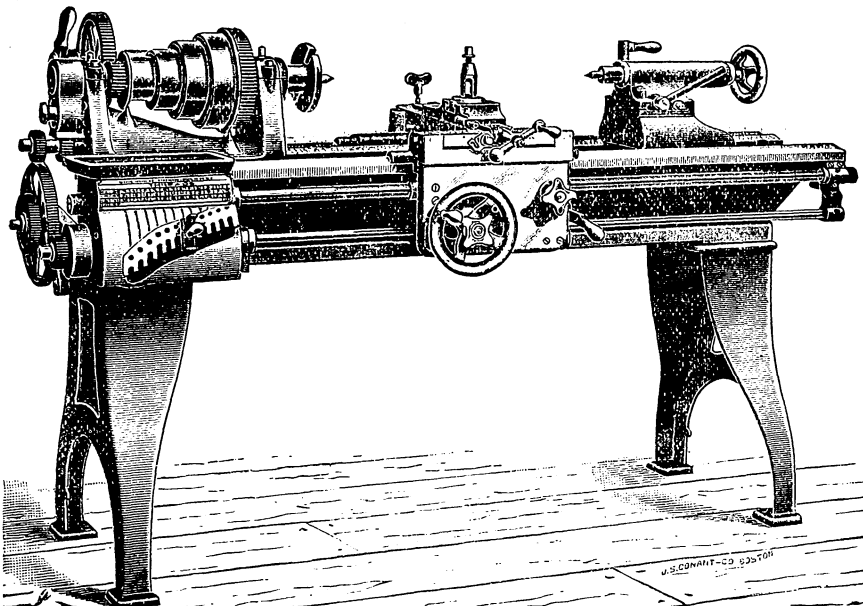
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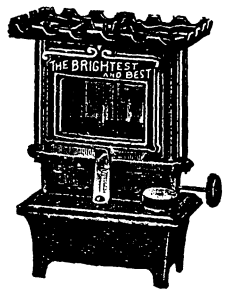
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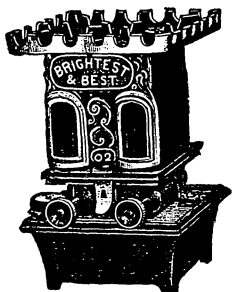
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List Price, \$8.00 per dozen.
Code word, *Garden*.
Packed one dozen in box.
Weight, 50 lbs.
Height, 8½ inches. Size of Tank,
3½ x 5¼ inches.
NICKEL FRONT. Four-inch wick.



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Code word, *Gauge*.
Packed ½ dozen in box.
Weight, 65 pounds.
Height, 8½ inches.
Size of Tank, 5½ x 8½ inches.
NICKEL FRONT. Three 4-inch Wicks.



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List Price, \$16.00 per dozen.
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Weight, 85 pounds.
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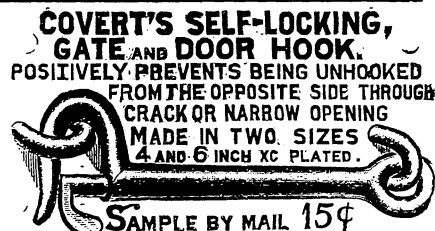


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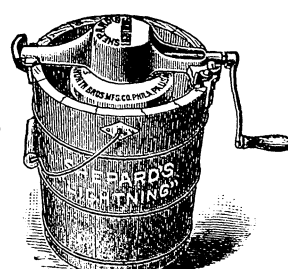
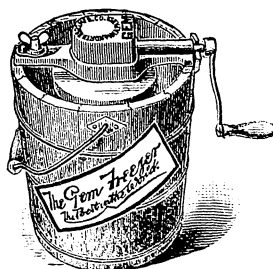
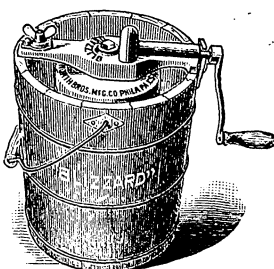
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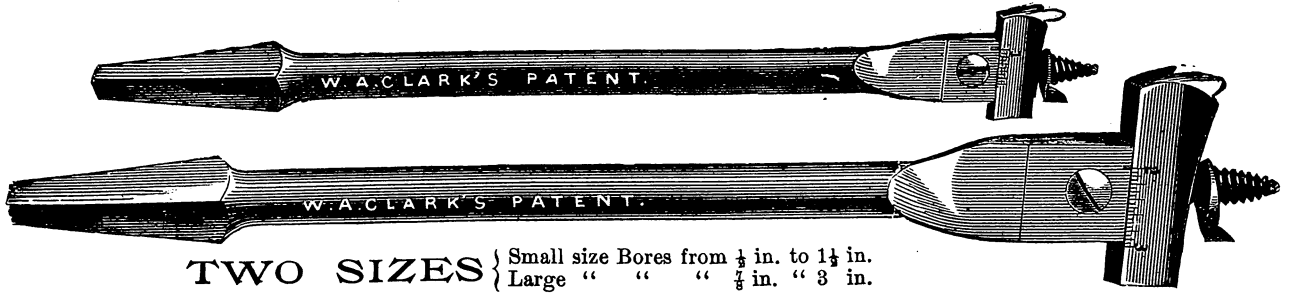


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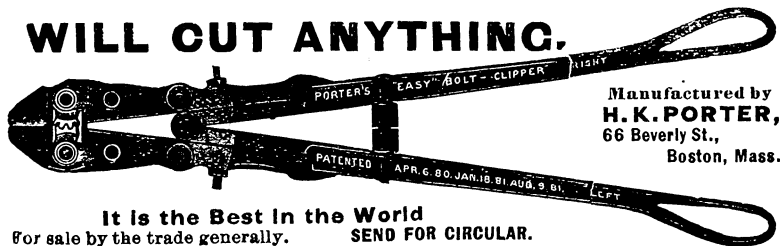
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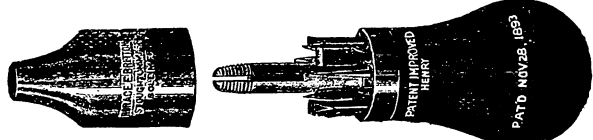


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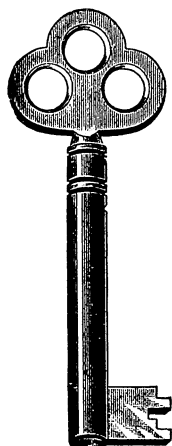


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 Containing five Brad-Awls, one
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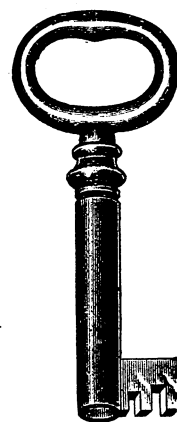
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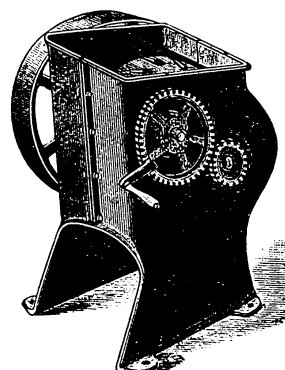
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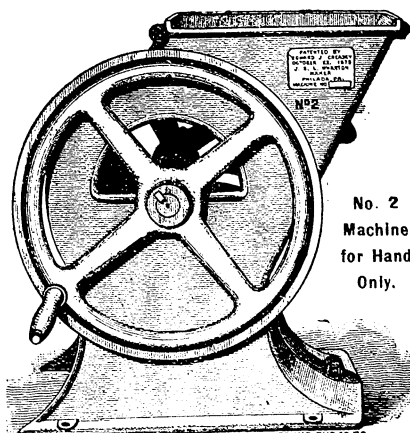


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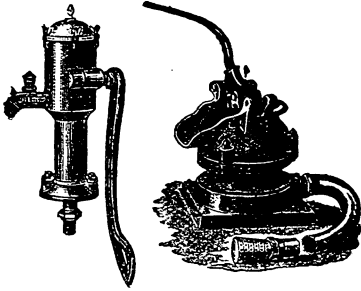
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Fig. 381.

Fig. 145.



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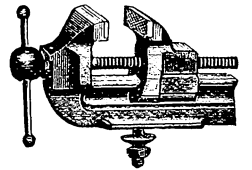
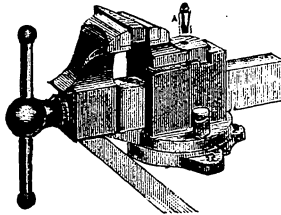
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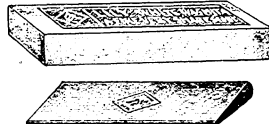
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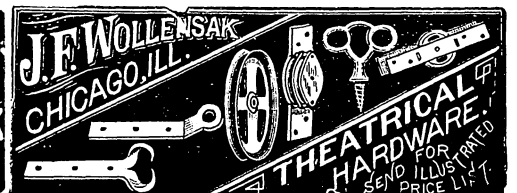
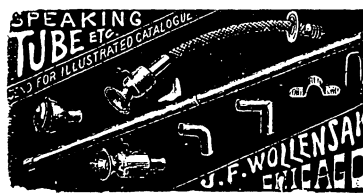
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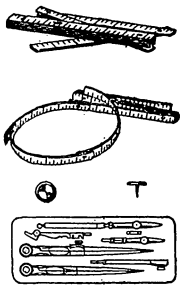
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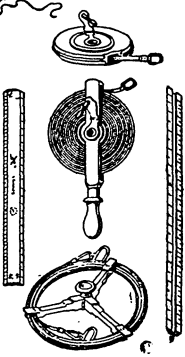
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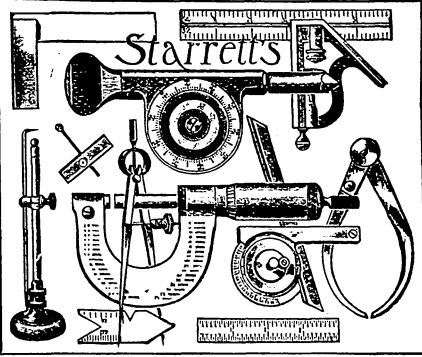
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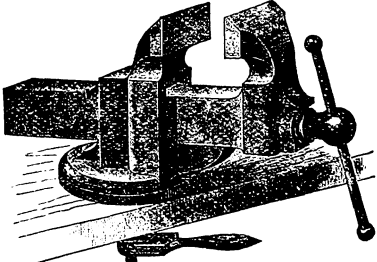


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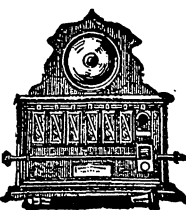
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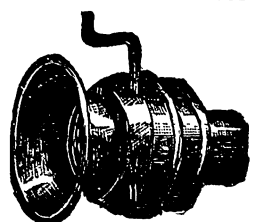
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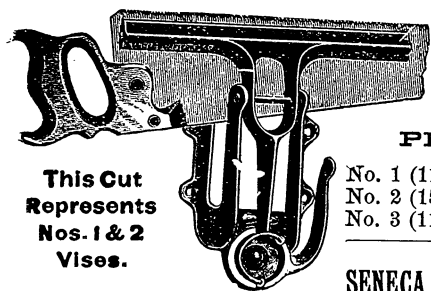
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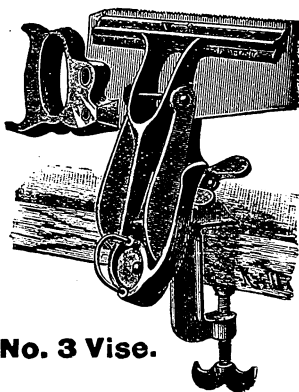
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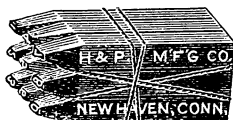
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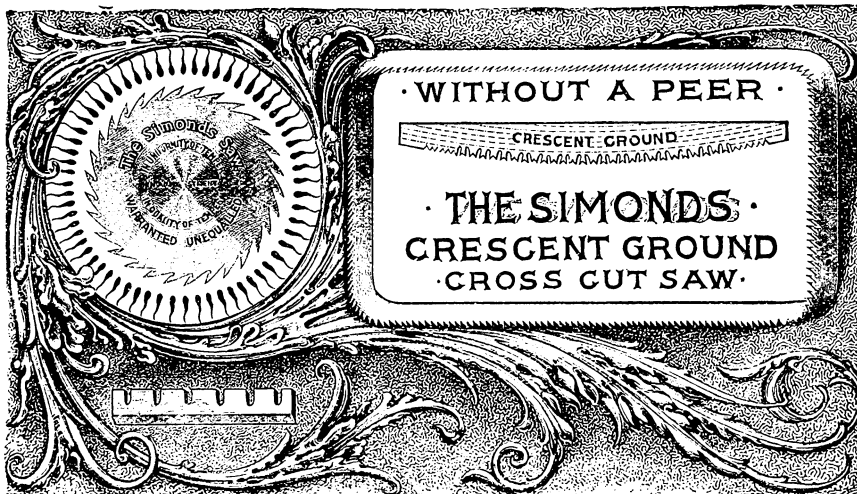
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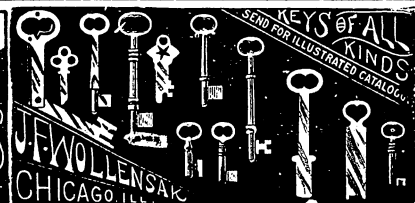
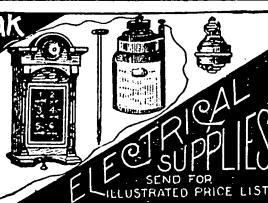
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FITCHBURG, MASS. CHICAGO, ILL. SAN FRANCISCO CAL. PORTLAND, ORE.

The Taintor Positive Saw Set

Mechanics are now inquiring for this tool, and Hardware Dealers
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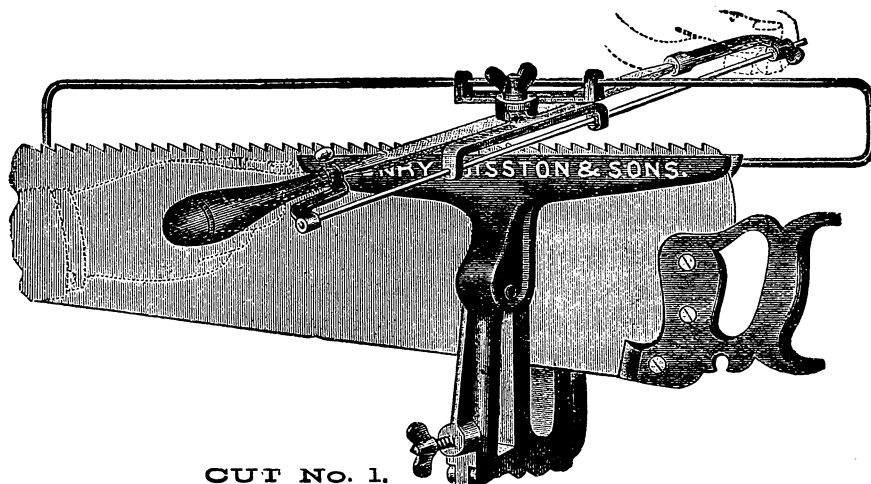
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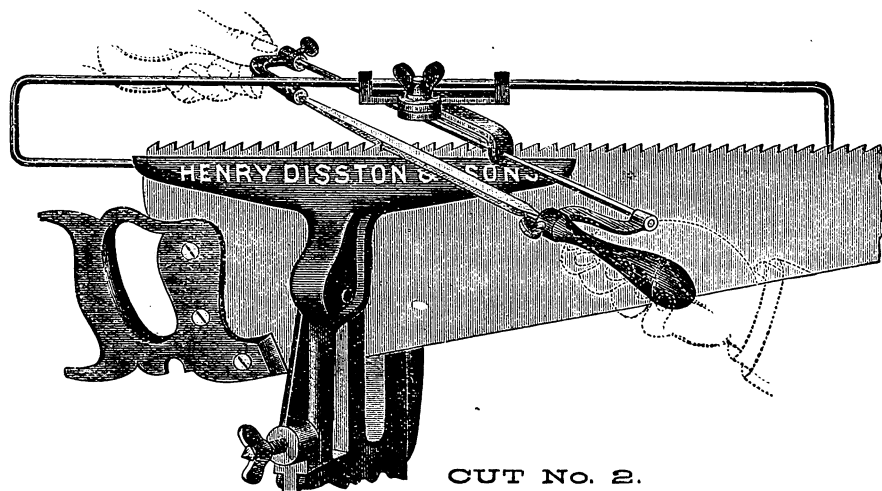
DISSTON'S Improved Saw Clamp AND FILING GUIDE.

ESPECIALLY DESIGNED TO ASSIST THOSE NOT SKILLED IN THE ART
OF SAW FILING TO FILE A SAW CORRECTLY.



CUT No. 1.

Cut No. 1 shows a saw and the attachment in proper position for filing the first side; and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



CUT No. 2.

To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth. Always keep the file as nearly horizontal as possible.

This filing guide is sold only attached to our No. 3 Improved Clamp or Vise, and not sold separately. We recommend this as the best saw clamp on the market, being quickly and easily adjusted, and not liable to get out of order.

Write for price including No. 3 Clamp Filing Guide, File and Handle complete. Packed one in a wooden box

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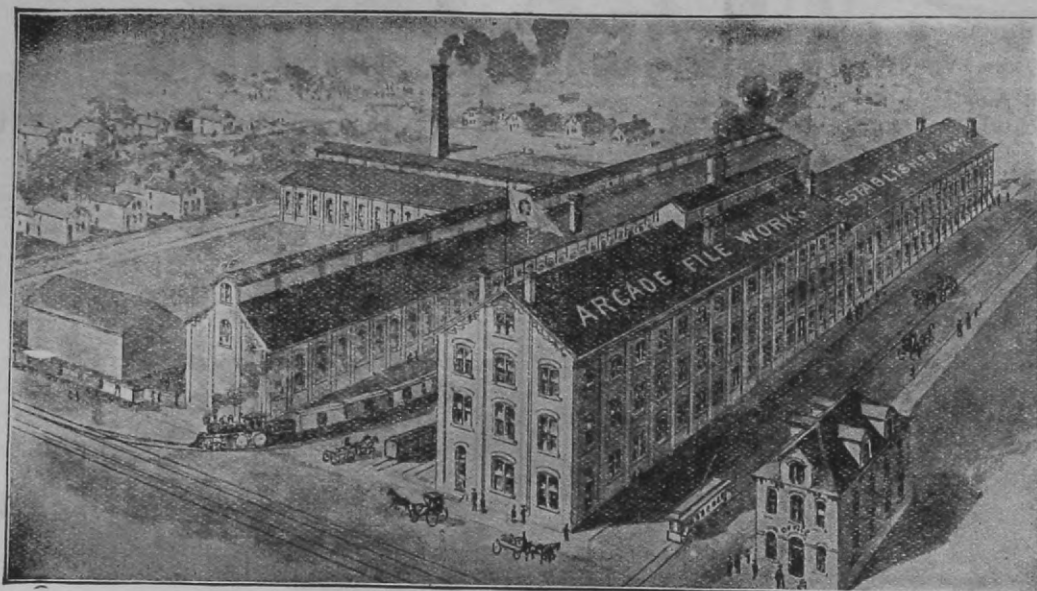
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83 READE STREET, NEW YORK CITY.



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Warranted Better than the Best
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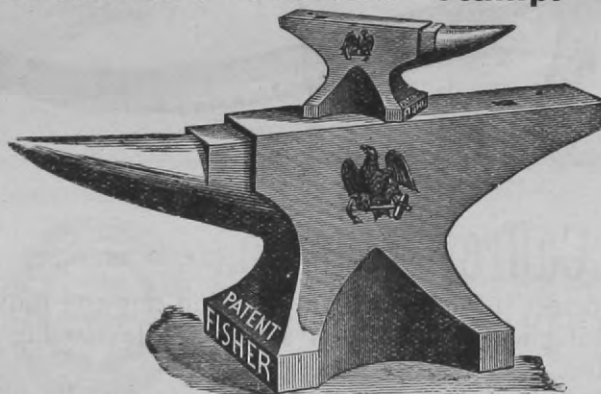
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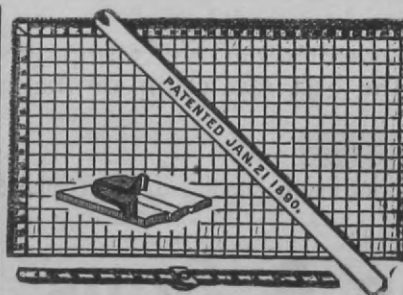
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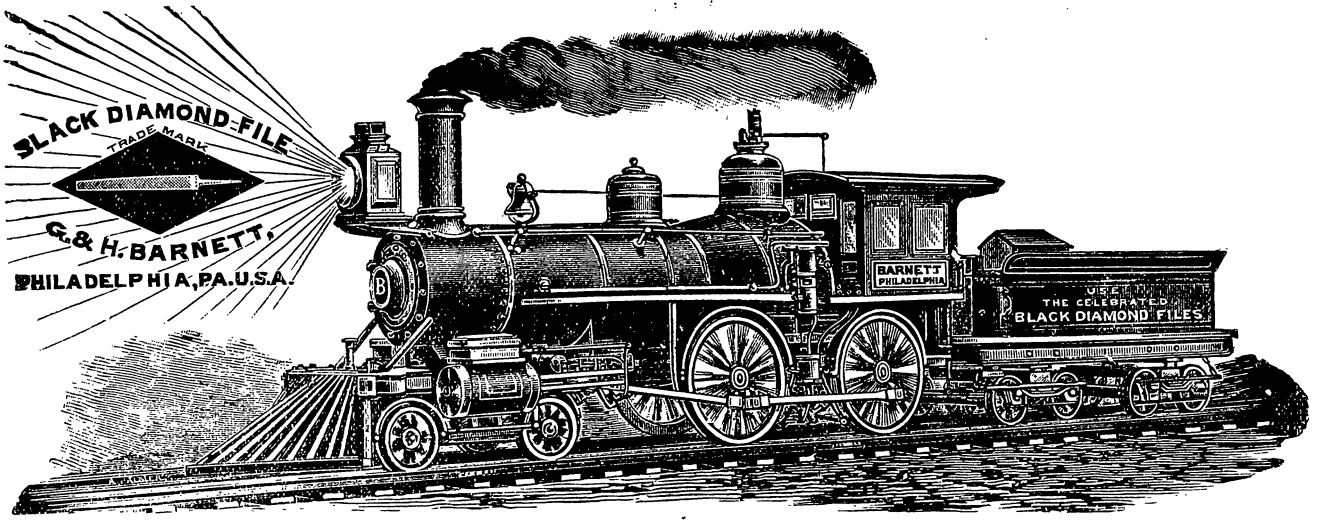
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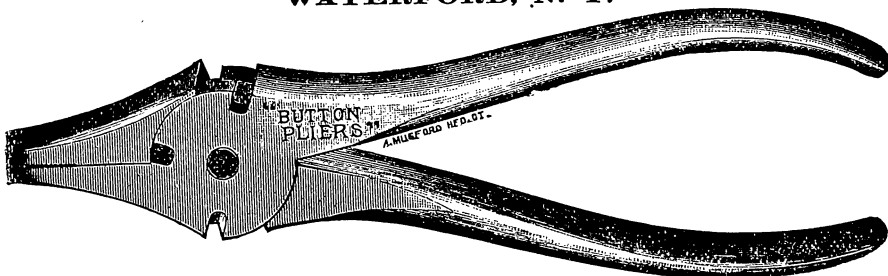
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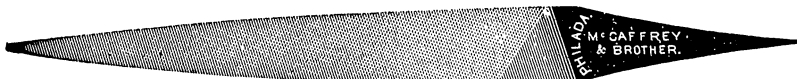
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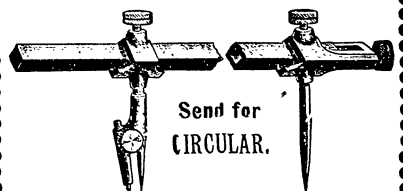
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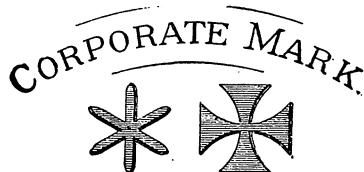
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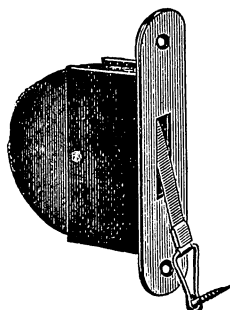
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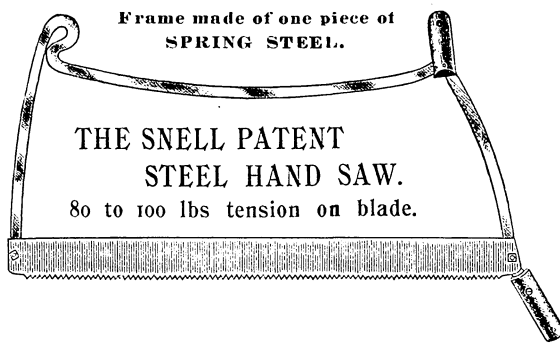
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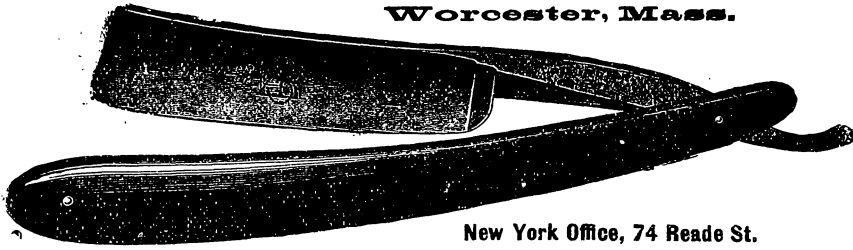
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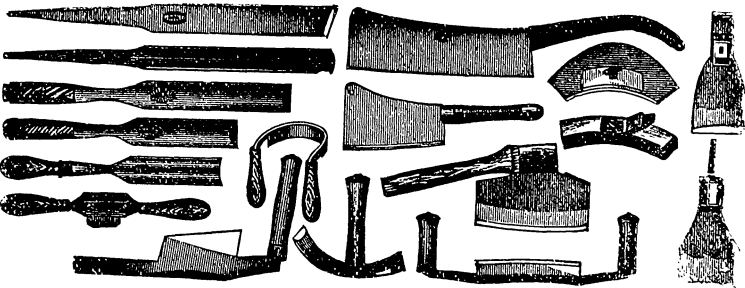
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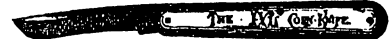
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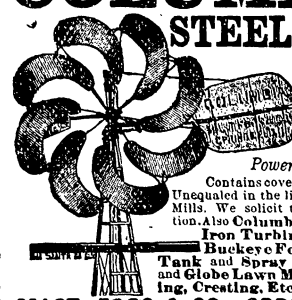
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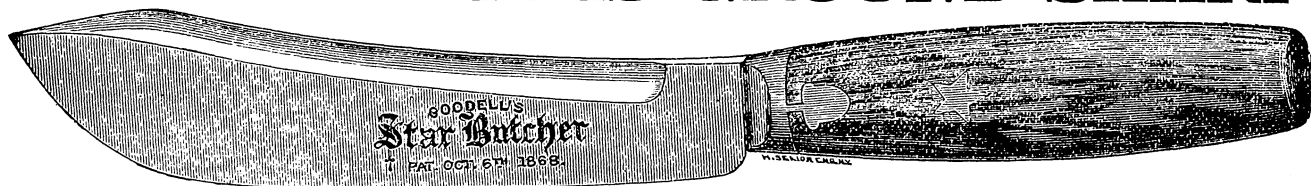
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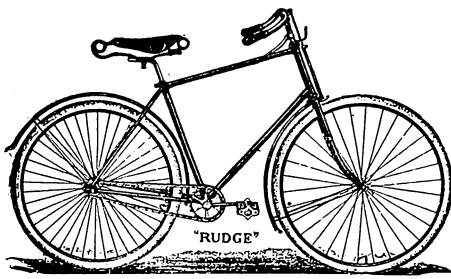
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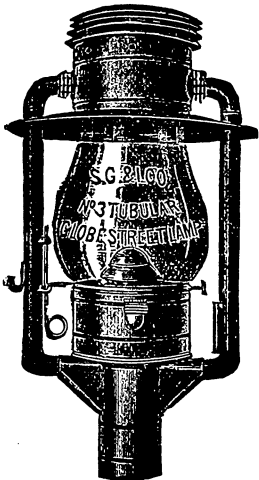
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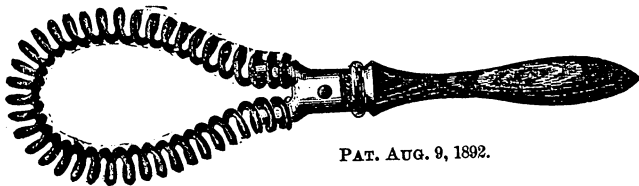
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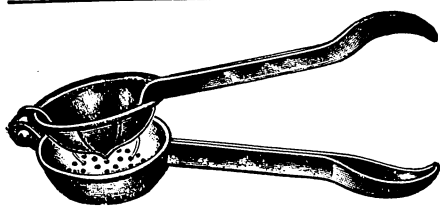
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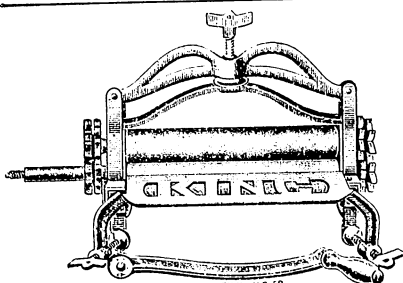
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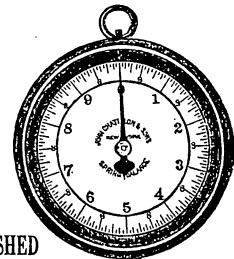
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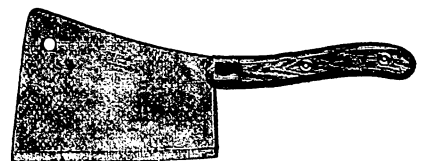


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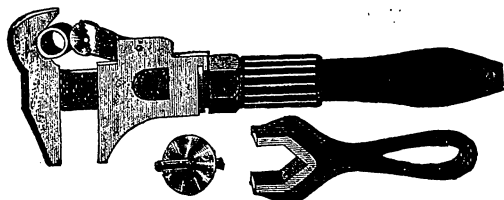
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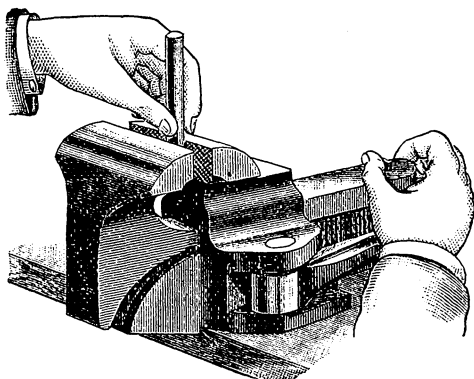
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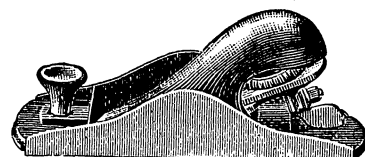
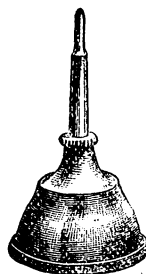
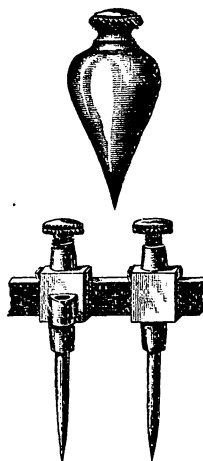
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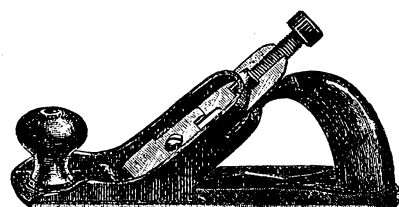
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tionary or Swivel Base.



Chaplin's Patent Iron Planes,
Corrugated Bottoms,
Checkered Rubber
Handles.



Challenge Iron Planes.
Simplicity of Construction.

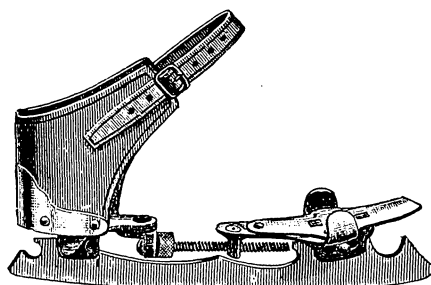
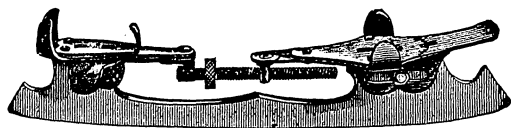
Boardman's Pat. Wrenches, Excelsior Expansion Bits, Whitney Drills, Baxter's Wrenches,
Wood's Pat. Plumb and Levels, Devoe's Square Attachments, Gem Wrenches,
Malleable Oilers and Lamps, Pencil Attachments.

TOWER & LYON, Manufacturers, - - 95 Chambers St., New York.

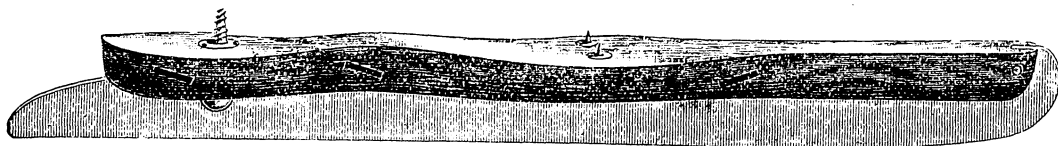
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—MANUFACTURED BY—

THE UNION HARDWARE CO.,
Torrington, Conn.



DONOGHUE RACING SKATE.



SUPERIOR QUALITY, STYLE AND FINISH.

—NEW YORK OFFICE:—

TOWER & LYON. - - - - 95 Chambers Street.

DAME, STODDARD & KENDALL,

374 Washington St., Boston, Mass.

IMPORTERS, MANUFACTURERS' AGENTS AND JOBBERS OF FINE FISHING TACKLE.

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Skinner's Celebrated Fluted Trolling Spoons.

Patent Adjustable Floats and Sinkers.

Bray Fly Books.

"Neverbreak" Split Bamboo Rods.

"Neverbreak" Braided Silk Lines.

Crosby's Hunting Hatchets.

Littlefield's Collapsing Net Ring and Staff,

The Latest and Best Ring on the Market.

SEND FOR OUR NEW CATALOGUE.

THE SAMUEL WINSLOW SKATE MFG. CO.,

Worcester, Mass., U. S. A

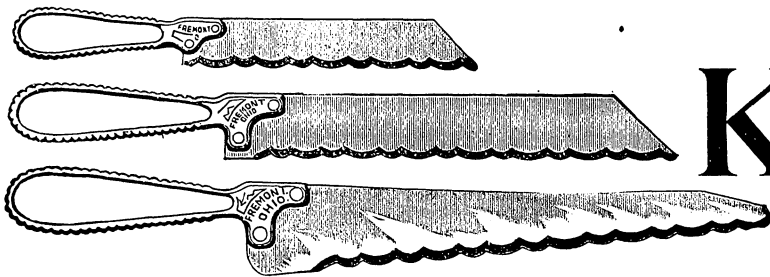


The most extensive Skate Factory in the World.



This is a fac-simile of the label on my VULCAN TOOL CO. brand of HATCHETS; a brand for which I have a regular trade in some sections, but to those who have not "caught on"—dealers who are handling an outside brand—I offer a limited quantity at a very low price. Inquiries for price solicited.

FAYETTE R. PLUMB, Philadelphia.



THE CLAUSS

KNIVES

Bread, Cake and Carving, are made of the finest of material and unsurpassed in workmanship. They are the cheapest and best of their kind. Don't be deceived, but see that you get the genuine Clauss Knives.

THE CLAUSS SHEAR CO., Fremont, O.

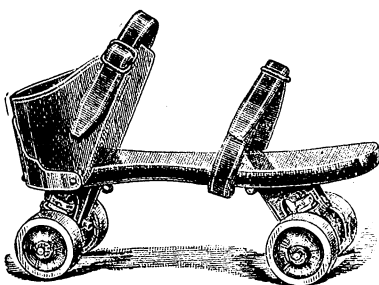
HENLEY'S - CELEBRATED **Rink AND Club**

Roller Skates.

A full, new and complete stock of Roller Skates, Skate Repairs and Rink Supplies. Address for 80 page Catalogue and Prices,

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RICHMOND, - - IND.



ACME CUTTING TOOLS.

Made in all Sizes.



SOLID STEEL ACME PLIER
AND WIRE CUTTER.

Made with cutters of best steel.

Jaws of choicest Tool Steel, dovetailed into the head, making it as strong as solid steel.

ACME CUTTING NIPPER.



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To Make a Bull's Eye In Your Business or at the Range?

If you deal in ARMS or AMMUNITION or shoot a Rifle, Pistol or Shot Gun, you will make a HIT by sending for the IDEAL HAND BOOK.

IDEAL MFG. CO., New Haven, Ct., U. S. A

Please mention *The Iron Age* when you write.

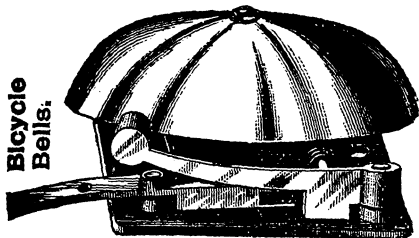


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Especially Low Prices

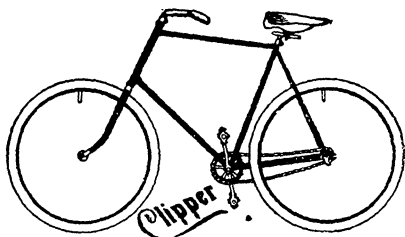
We manufacture hardware specialties of all descriptions to order.

HAINES & ZIMMERMANN, 407 Cherry St., Phila



BEVIN BROS. MFG. CO., Easthampton, Conn.
Manufacturers of

Sleigh Bells, House, Tea, Hand, Gong Bells, &c



Clipper Bicycles

are built to please the dealer and rider.

Are you in the bicycle business? If not, you can make it pay to handle Clippers. Buy direct from the manufacturer and save the jobbers' profit. It will add considerable to your bank account. We want responsible dealers only. In fact we are sure of it. Our policy is a protective one, and will please you. It protects against Scalpers and "Curb Stone Brokers."

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Grand Rapids, Mich.

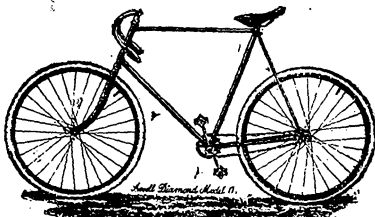
LOVELL DIAMOND CYCLES.

HIGHEST GRADE.

All Sizes and Prices. See our line before you purchase.

All the Latest Improvements.

FULLY GUARANTEED.



RACER-WEIGHT, 19 LBS.

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SEND FOR CATALOGUE, FREE TO ALL.

AGENTS WANTED.

Do you want to buy Bicycles CHEAP?

If so, write to us for prices on the Falcon No. 1, Falconess, Falcon Junior (boys' bicycle) and Hackney.

THE W. BINGHAM COMPANY,
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Bicycles! A Difficult Problem Answered!

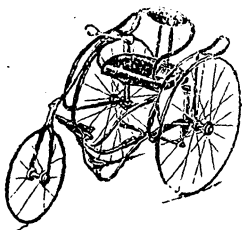
and
How
To
Make
Money!

2 SIZES!
No. 1, \$125.00,
Weight, 28 lbs.
No. 2, \$110.00,
Weight, 31 lbs.

The Wellington

Our new catalogue will tell you all about it. Agents wanted, to whom we will allow most liberal inducements.

STOKES MFG. CO., Makers, 295 Wabash Ave., Chicago, Ill.
WESTERN BRANCH OF UNION CYCLE MFG. CO.



Something New! Ball THE "PERFECTION" Bearing Girls'

Run as easily as Bicycles. Cost about the same as old style parallel bearings. Sold by

Hardware and Toy Jobbers.

MANUFACTURED BY

The Toledo Metal Wheel Co, Toledo, O. Tricycles.

Every Year

the "STERLING" becomes more popular with dealers. They find it gives better satisfaction than any other wheel. No worry over repairs.

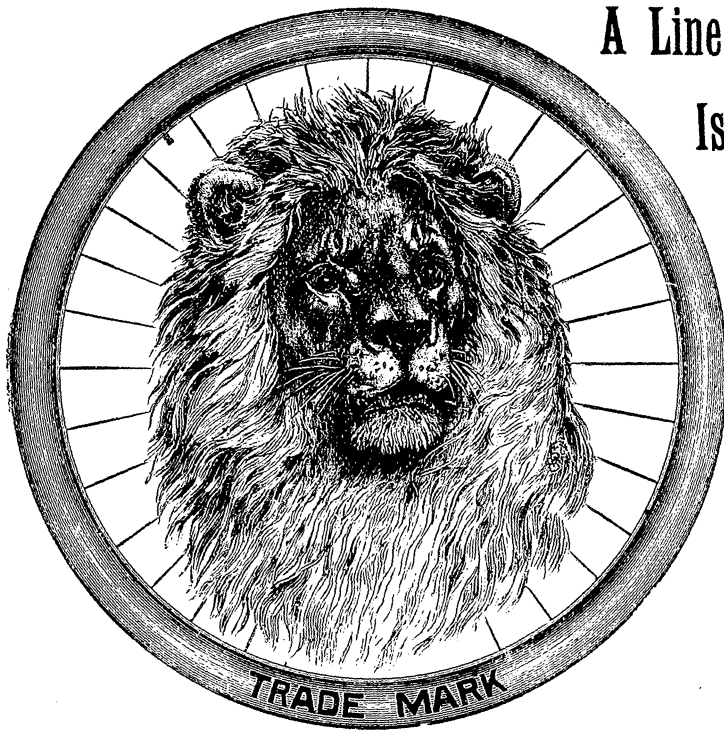
THE STERLING
(Built like a Watch.)

A wonderful, strong, light wheel, with a dozen points of superiority over all others. Our 'new departure' catalogue (free) tells all about it.

STERLING CYCLE WORKS.
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Dog,
Breast,
Sash and Coil,
Martingale,
CHAINS
Staking Out,
Plumbers,
Halter,
Key,

KELLEY & McBEAN, Niagara Falls, N. Y., U. S. A.



A Line of Hardware

Is not Complete Without

MONARCH BICYCLES.

They will make you more money than anything you can handle.

At the World's Columbian Exposition they received a general award for all points, including

Design, Workmanship and Finish.

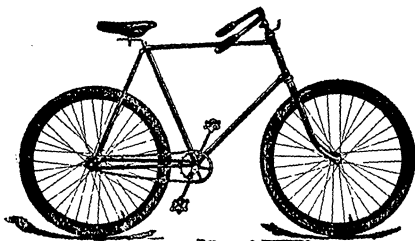
Prices, \$90.00, \$100.00, \$125.00.

Weights, 25 to 34 pounds.

Send for twenty-four page catalogue.

MONARCH CYCLE CO., Lake & Halsted Sts. Chicago, Ill.

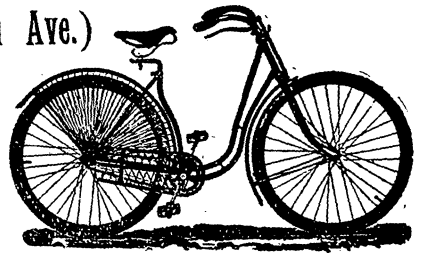
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C. F. GUYON CO.,

Nos. 97 and 99 Reade St., New York,

Genl. Eastern Distributing and Sales Agents.



The King of '94.

Warranted equal to any Bicycle made in America, Regardless of Price.

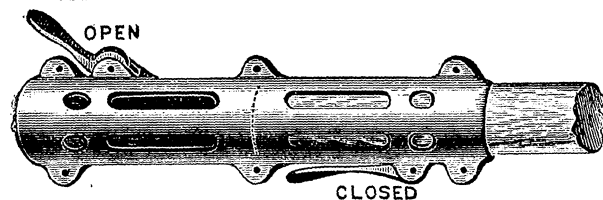
All the Modern Improvements up to Date in Every Respect.

5 1/4 inch tread, straight rear forks, all parts interchangeable, fitted with the Waverley clincher tire, made under Gormully and Jeffreys patents by an entirely new and vastly superior process patented by ourselves, Scorchers pattern.

\$85.00 Dealers who are after the best goods on the market can't afford to let the agency pass them. Write for Catalogue No. 13 mentioning this paper.

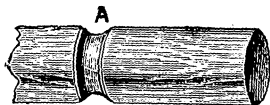
INDIANA BICYCLE CO.,

INDIANAPOLIS, IND., U. S. A.



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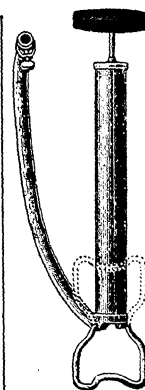
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Extension Handle Coupling.

Made entirely of Malleable Iron and cannot break.

Handles lock in coupling by means of a cam lever and cannot pull out.



**HEATH'S
BALL VALVE PUMP
AND
UNIVERSAL COUPLING,
For Bicycle and Sulky Wheels.**

The handiest, windiest, strongest pump in the world at any price.

Price \$2.00.

Liberal discount to the trade.

Manufactured by

**S. F. HEATH CYCLE CO.,
Minneapolis, Minn.**

YOUR SKATES WILL NOT TRUST — IF YOU USE — PARAVASELINE.

It is a Lubricant that will prevent all kinds of metals from rusting.
WHEN YOU COME HOME AFTER SKATING
apply a light coat of Paravaseline to your skates and it will keep them in good condition.
ONE TUBE WILL LAST A YEAR
and will be mailed to any address on receipt of 25 cents or you can get them at all hardware or skate stores.
MANUFACTURED BY
THE BRIDGEPORT GUN IMPLEMENT COMPANY,

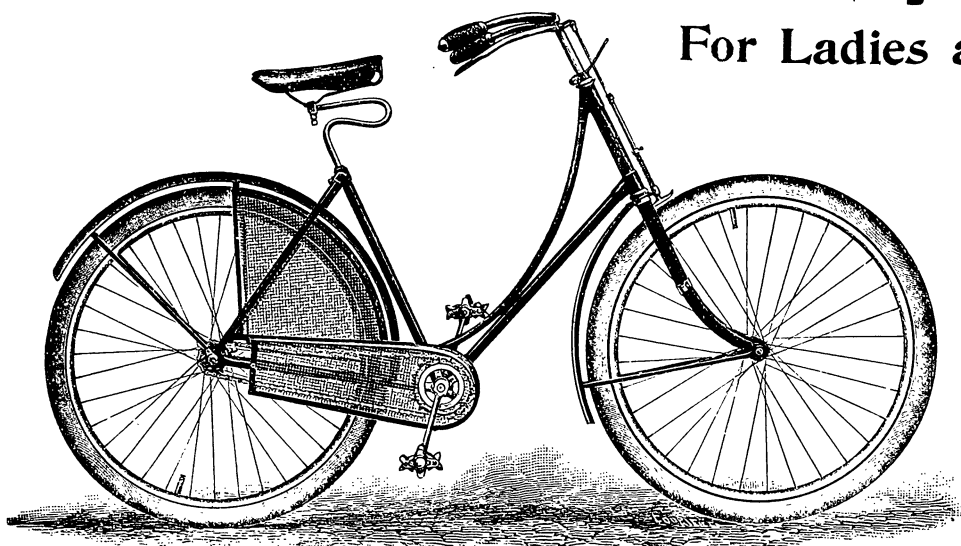
313 & 315 Broadway, New York.

PHILLIPS SCREENS

Are Reliable.

New 1894 "Queen City" Safety.

For Ladies and Misses.



Full Ball Bearings
Throughout.

*In all respects
a first-class
machine.*

MANUFACTURED BY

GEO. N. PIERCE & CO.,

BUFFALO, N. Y.

Reliable Torches are
what you want.



Made either for Oil or
Gasoline.



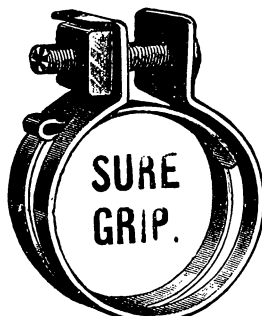
These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner.

Write us for prices. A liberal discount given to the trade.
Manufactured by
THE SCHNEIDER & TRENKAMP CO.,
Nos. 479 to 497 Case Ave., Cleveland, Ohio.

REDFIELD'S

WROUGHT STEEL

HOSE CLAMP.



STRONGER,
LIGHTER
And more pliable
than a cast clamp.

Perfect Inner Circle
Will not break.

Sample and Price
on application.

J. R. CLANCY, - Syracuse, N. Y.

OUR
AMERICAN
And Safety Hammer

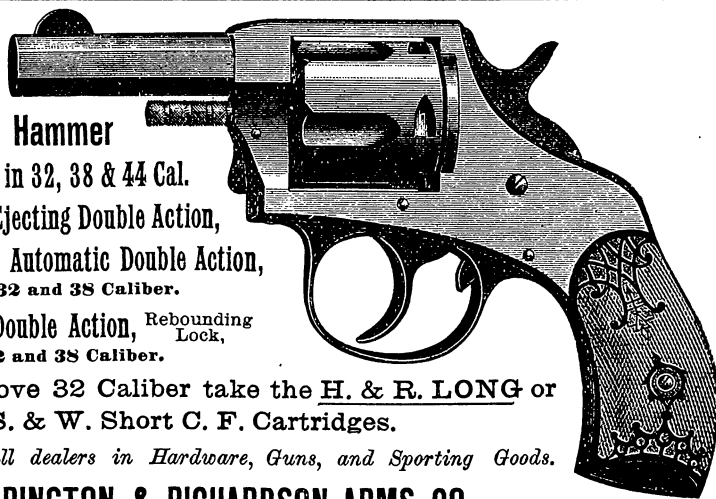
Double Action in 32, 38 & 44 Cal.
H. & R. Imp. Ejecting Double Action,
H. & R. Imp. Automatic Double Action,
In 32 and 38 Caliber.
And Premier Double Action, Rebounding
Lock,
In 32 and 38 Caliber.

All the above 32 Caliber take the H. & R. LONG or
S. & W. Short C. F. Cartridges.

For Sale by all dealers in Hardware, Guns, and Sporting Goods.

HARRINGTON & RICHARDSON ARMS CO.,

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LIGHT YOUR DARK SHOPS CHEAPLY.

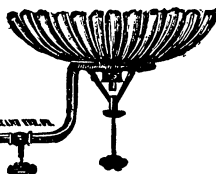
Give your men plenty of Light and they will do
double work.

The Wall Torch has been used for several years as a means of illumination in Mills, Foundries, Machine and Car Shops, Tunnels, Street Stands, Band Stands, Smith Shops, etc.

While there are many cheap, inferior torches made which injure the sale of a good article, and condemn the Torch in general, our "Incandescent" Wall Torches are recognized as the best, and are now in use in the largest manufacturing establishments in the country giving **PERFECT SATISFACTION**, as is evidenced by the **DUPLICATE ORDERS** we receive from year to year.

They burn 150° Coal Oil, or 74° Naphtha, requiring a different burner for each.

In ordering be careful to state which is desired.



Price, for Single Torch, complete, \$2 each.

SPECIAL PRICE QUOTED FOR QUANTITIES.

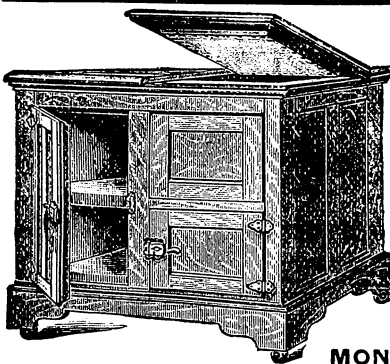
THE STANDARD LIGHTING CO.,

100 to 118 Perkins Ave., - - - Cleveland, Ohio,

To YOUR Interest !

A FAC-SIMILE OF THE ADVERTISEMENT WITHIN THE MARGINAL LINES BELOW WILL APPEAR DURING THE RETAIL SEASON IN MOST OF THE LEADING MAGAZINES AND HOUSEHOLD PUBLICATIONS.

WOULD IT NOT BE TO YOUR INTEREST AS A DEALER TO PREPARE



The superiority of Stoneware Lining in Refrigerators becomes obvious at a glance. It neither sweats nor absorbs moisture and never becomes sour or musty. It is made without open seams; is practically indestructible and is very easily cleaned.

Stoneware Lined Refrigerators

are built upon the best known principles of refrigeration. A perfect circulation of dry, cold air prevents the accumulation of gases and vapor or the mixture of flavors, while the consumption of ice is greatly reduced. The first cost is greater than for ordinary refrigerators but they are far cheaper in the end. If your dealer don't keep them, write for Catalogue. We pay the freight.

MONROE REFRIGERATOR CO.,

LOCKLAND, OHIO.

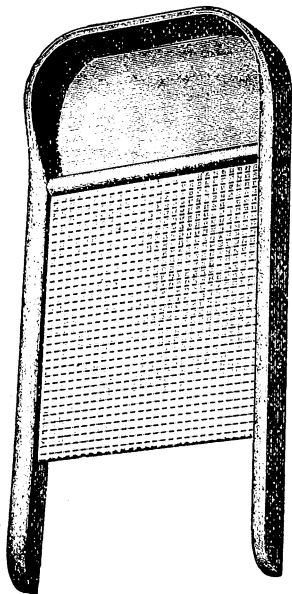
IN GOOD TIME FOR THE DEMAND THAT WILL THEREBY BE CREATED ?

AS A RULE

WE SELL BUT ONE DEALER IN A TOWN, AND WILL NOT SELL TO CONSUMERS IN PLACES WHERE OUR GOODS ARE SOLD BY DEALERS, BUT WILL REFER INQUIRIES TO THE DEALERS.

WRITE FOR CATALOGUE AND TRADE DISCOUNTS.

The Utility Washboard



Is a Zinc Board made from best quality No. 6 Zinc, the heaviest and strongest Zinc in use for Washboards.

CRIMP—The Crimp is our Improved Deep Globe, acknowledged far superior to any now in use on other boards.

OFFERS—absolute protection from water at sides as well as the top of the scap board.

WHY?—Because being made of one piece which is bent thin and broad at the sides and top of soap board where all splashing occurs, it is impossible in washing to splash over it.

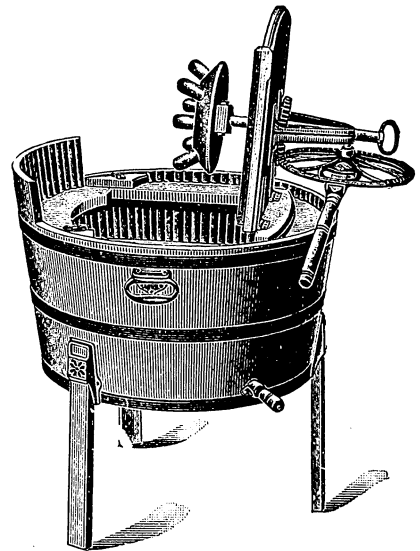
CONSTRUCTION—The Board in point of construction excels anything of its kind ever produced. Its lines present a symmetry and regularity pleasing to the eye, and in point of strength is unquestionably superior to any.

SALES—Where these are offered for sale competing boards are not "in it."

MANUFACTURED BY

Olds Wagon Works,
Fort Wayne, Ind., U. S. A.

THE Corrugated Round Washer.



OUR SPECIAL CONSTRUCTION,
SUPERIOR WORKMANSHIP,
BEAUTY OF FINISH,

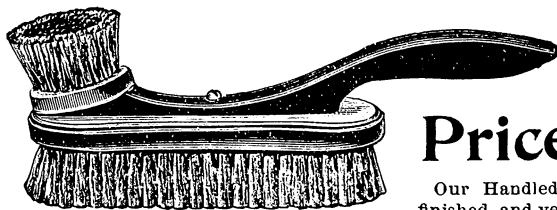
—AND—

RECENT PATENTED IMPROVEMENTS,
Cause thinking dealers to investigate this washer, with but one verdict—

IT IS PERFECTION.

Write for bottom prices.

DIETHE & BARROWS, Fort Wayne, Ind.



Brushes And
Prices to suit the trade.

Our Handled Shoe Brushes are handsomely finished and very salable. No nails. Handles and Top Knots are screwed on.

THE BROMWELL BRUSH & WIRE GOODS CO., - CINCINNATI, O.

THE SCIENTIFIC SWEEP MILL

FOR TWO HORSES.
Grinds EAR CORN and SMALL GRAINS.

Special Cob Breaking Device and peculiar dress of Grinders. Gives BETTER WORK, MORE OF IT, WITH LESS WORK TO TEAM than others. Send for catalogue of this and

POWER MILLS.
THE FOOS MANUF'G. CO., SPRINGFIELD, OHIO.



FULLY GUARANTEED.
SENT ON TRIAL.

HOW TO KEEP A STORE

BY S. H. TERRY.

406 PAGES, 5 x 7½ INCHES.
POST-PAID, \$1.50.

Among the subjects discussed are: The selection of a business; choice of a locality; buying a stock of goods; examining, marking and arranging goods; how to advertise; employment of clerks; selling for cash and credit; keeping accounts; expenses; copartnerships; losses by fire, theft, &c.; influences of social life on business; buying at auction; investment of profits; insolvency; business qualifications

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DAVID WILLIAMS, Publisher and Bookseller

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IRON RESERVOIR VASES.



Nearly 100
styles and
sizes.

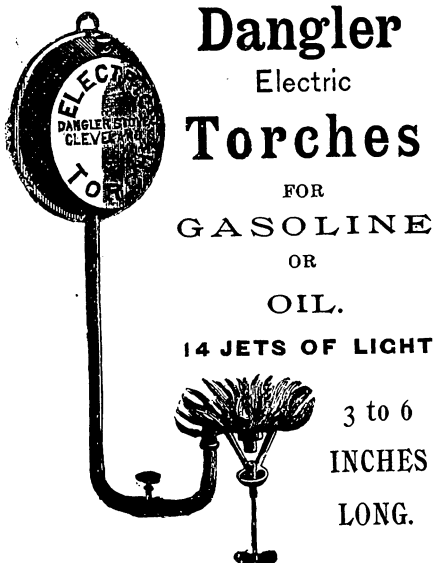
List prices
from \$6.00
to \$100.00
each.

These Vases
are made with a
reservoir for
water, from
which a con-
stant and even
supply of moist-
ure is drawn by
capillary at-
traction, and
they do not need
watering often-
er than once in
ten or fifteen
days. Thou-
sands of Reser-
voir Vases are in

use on lawns and in cemeteries all over the
country. Our prices are no higher than those
of ordinary vases.

Catalogue sent on application.

WALBRIDGE & CO.,
BUFFALO, N. Y.



Dangler Electric Torches

FOR
GASOLINE
OR
OIL.

14 JETS OF LIGHT

3 to 6
INCHES
LONG.

FOR lighting manufacturing establish-
ments, such as Rolling Mills, Found-
ries, Machine Shops, Engine Rooms,
&c., &c., with a convenient, portable,
brilliant, steady light, and by cheaper
means than by Coal Gas.

SOLE MANUFACTURERS,

The Dangler Stove & Mfg. Co.,
Cleveland, Ohio.

PHILLIPS SCREENS

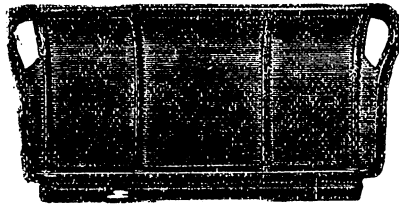
Are Reliable.



INTERCHANGEABLE
LOCK-CORNER SHELF BOXES,
Screw Cases, &c.,
FOR THE HARDWARE TRADE.
A. H. GREEN,
22 Park Place, New York.

McKINNON DASH & HDW. CO.,

LIMITED, Manufacturers of



C PATTERN.

FINE QUALITY
DASHES

AND

FENDERS,

SURREY DASH. BUFFALO. - N. Y.

SICKELS, SWEET & LYON,

Wholesale Hardware.

Office, 35 Barclay St. Warehouse, 40 Park Place, New York.

Carry Stock of Jackson, Mich., Farming Tools

Shipments from Factory if preferred.

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Cortland Door and Window Screen Co., Union Steel Screw Co., Eagle
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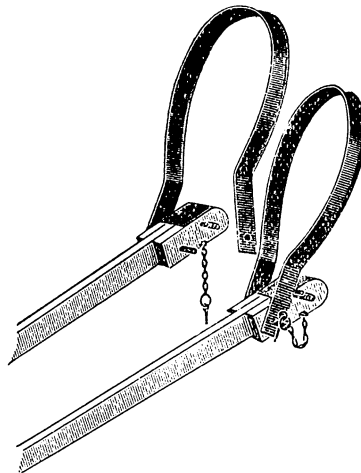
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BISHOP'S

IMPROVED

STEEL MONARCH.

PATENTS PENDING.



THE BEST METALLIC HORSE POKE.

The only Poke having a tempered Steel Bow
of perfect shape. Will stand severe service,
being strongly built in every part. Prices
reasonable. Ask your Jobber for them.

MAKER,
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COMMON MOUSE TRAPS BEST FOR USE!

Ripley Mfg. Co., Unionville, Conn



Porcelain-Lined Lemon Squeez-
ers, Steak Hammers, Boot Jacks
Magnetic Tack Hammers, Mal-
lets, Bung-Starts, Hand Screws
Beacon Hill Pat. Mouse Traps
Sunny-Side 2 lb. Lap Board

Phillips Screens

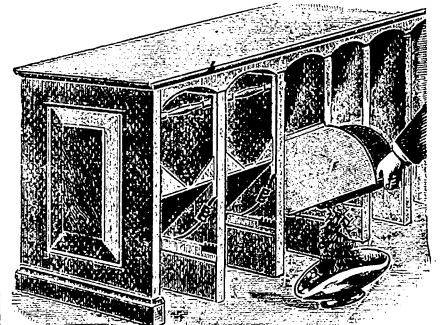
FOR DOORS AND WINDOWS, ARE WELL
MADE, FROM GOOD MATERIALS BY

A. J. Phillips & Co., Fenton, Mich.

Hardware Dealers!

Look to Your Interests!

STACY'S PATENT NAIL BIN and COUNTERS
Over 4000 now in Use.



If you are making any changes in your store
and want new counters or nail cabinets, don't
fail to write us as we have just what you want.
Address,

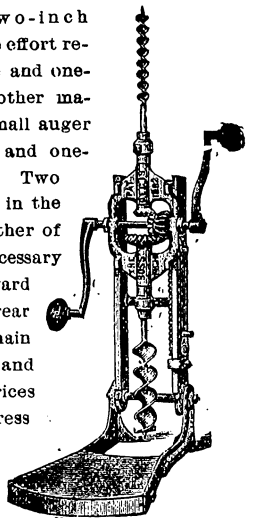
STACY MFG. CO.,
No. 109 Sprague St. DAYTON, OHIO.

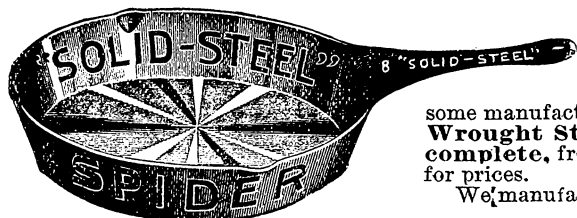
The Boss 2-speed Boring Machine.

Will operate a two-inch
auger with the same effort re-
quired in using one and one-
half inch in any other ma-
chine, and for the small auger
have a speed two and one-
half times faster. Two
augers may be kept in the
machine, to use either of
which it is only necessary
to point it downward
by first taking the gear
frame out of main
frame, inverting and
replacing it. For prices
and discounts address

Buckeye Mfg. Co.

Union City, Ind.



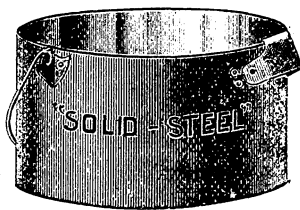
"SOLID-STEEL" SEAMLESS HOLLOW WARE.

No Seams, no Rivets in "Solid-Steel" Ware.

Brilliant Finish.

Notwithstanding the claims made by some manufacturers' agents our spiders are made from **Wrought Steel, Without Seams or Rivets.** complete, from a single piece of metal. Write for prices.

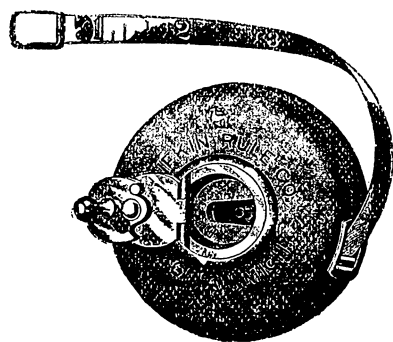
We manufacture our own goods.



"Solid-Steel" Maslin Kettle.

The Cleveland Stamping & Tool Co., Cleveland, O.

We do Light and Heavy Stamping and Blanking. Also build Dies and Stamping Machinery.

**"RELIABLE"
Steel Measuring Tapes.**

Entirely new. Handle or crank when closed is perfectly flush with leather case. Opens by pressing button on opposite side and folds out double, giving increased leverage. Best and most convenient steel tape on the market. Fully guaranteed. Will send samples on approval. We carry a complete stock of our goods at our New York Office, 20 Murray St.

LUFKIN RULE CO., Saginaw, Mich.**A Triumph in Small Bore Rifles.
STEVENS' "FAVORITE" RIFLE.**

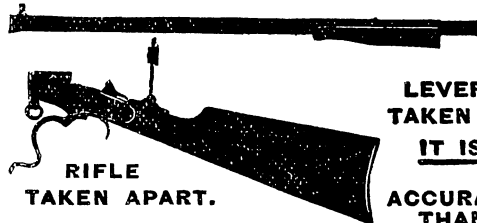
10 SHOTS AT 40 FEET. 10 SHOTS AT 40 FEET. 10 SHOTS AT 40 FEET.

2 LONG RIFLE. 22 SHORT. 22 LONG. 22 LONG.

25 STEVENS

ABOVE TARGETS
ARE
ACTUAL SIZE.

Made for the 22 or 25 Rim Fire Cartridge.



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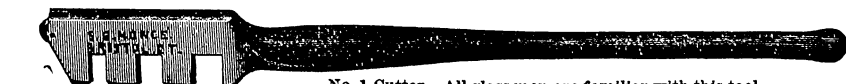
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22-INCH BARREL.
LEVER ACTION LIKE SHARPS.
TAKEN APART IN TEN SECONDS.
**IT IS SIMPLY IMPOSSIBLE
TO MAKE MORE
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No. 17. Plain Open Sights.....\$12.50
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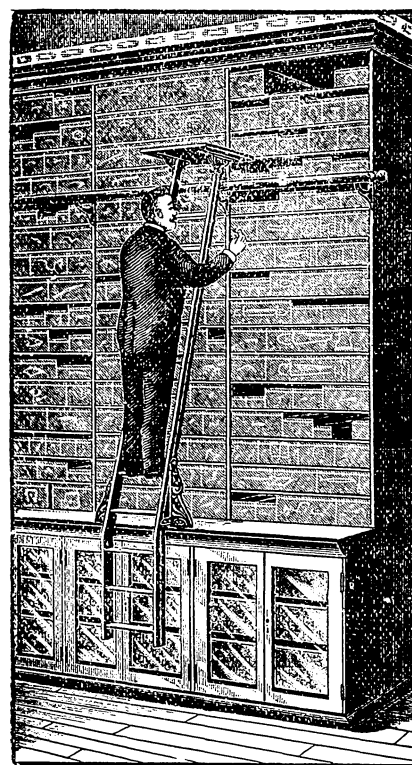
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Ladders are not Suspended, but Supported from below on wheels. Move easier with operator on than others when empty. Highly finished, and very handsome. Made in different grades and prices to suit.

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Meeting with such universal appreciation, we think it to our interest to appoint **ONE** responsible firm of Hardware Merchants in **EACH** town and city as our sole agents.

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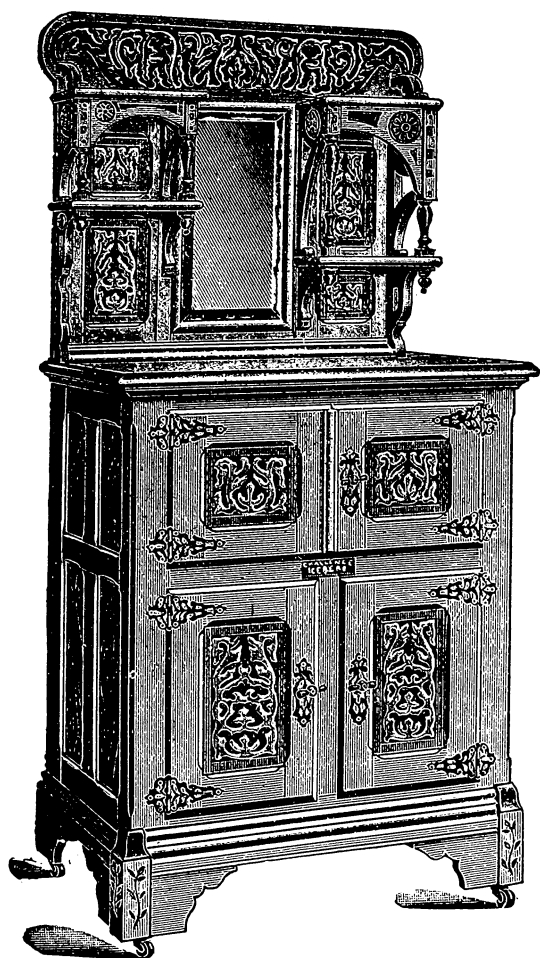
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BOLT CUTTERS

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MANUFACTURED BY

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Write for our large Illustrated Catalogue for 1894.

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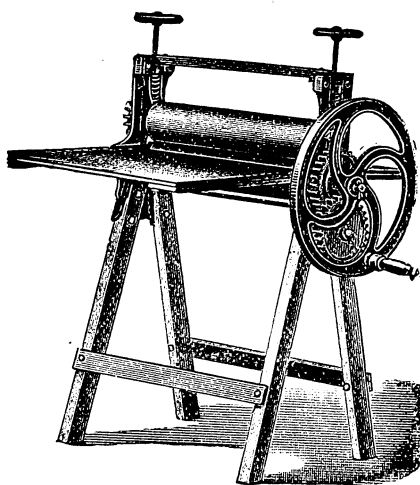
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Better Work than Hand-Work.

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We Guarantee Every Machine.



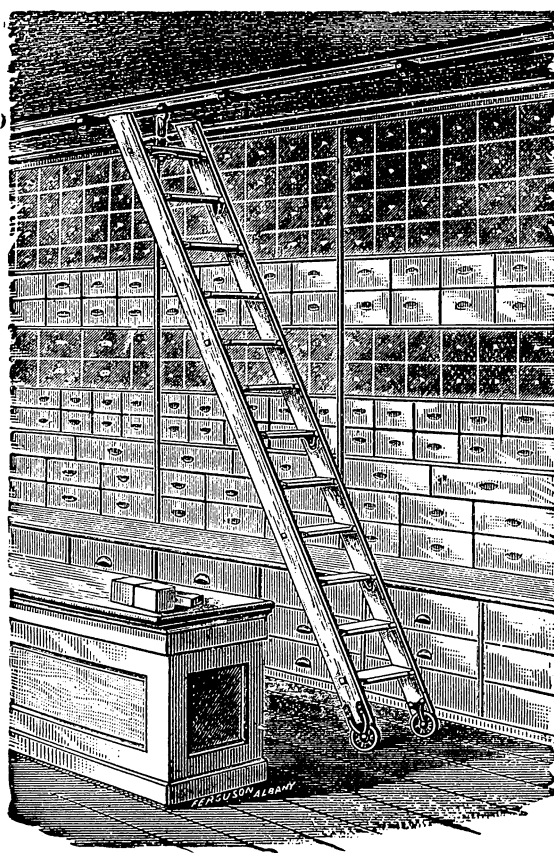
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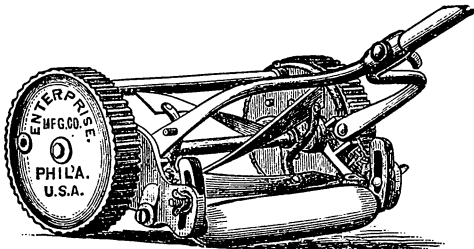
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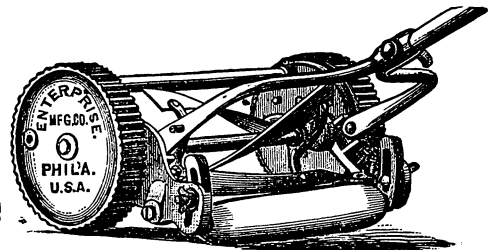
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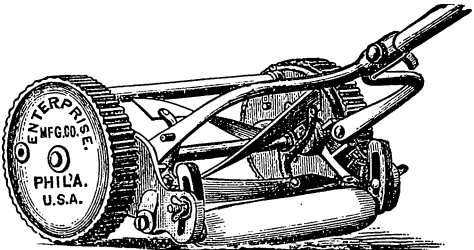
7, 9, 11, 13, 15 inches.

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and

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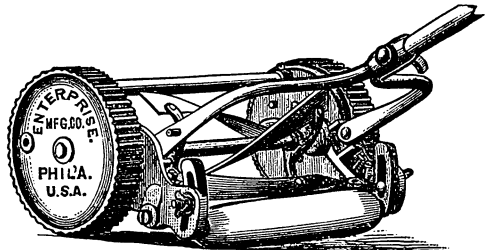


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EQUAL TO
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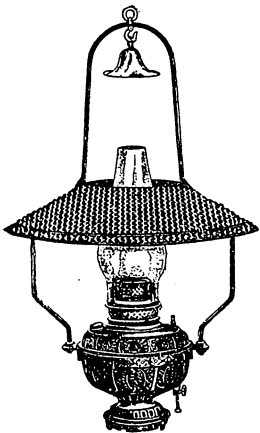
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MAMMOTH CENTRAL DRAFT BANNER.



With 20-inch Tin Shade.

No. 858. Size 3.

Enlarged Oil Pot

No Smoke.

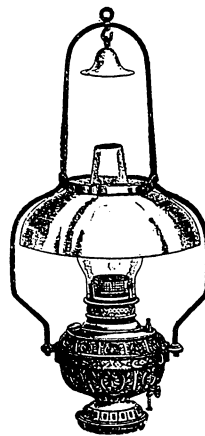
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Cheaper and Better than Gas.

300 Candle Power.

Holds One Gallon Oil.

Burns Brightly about 10 hours.



With 14-inch Dome Shade.

The Banner is the only Fount having Extra Feeder Wick which supplies oil to the Burning Wick. Harp has our Patent Extension Band, allowing Fount to pass down and through instead of lifting over as in the old style harp. Flame is regulated by our Improved Ratchet Movement. This Movement gives an exactness and nicety in adjusting that is not possible in any other wick raising device.

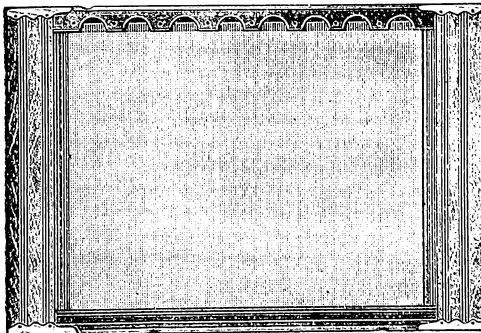
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EMPIRE "A" WINDOW SCREEN.

WITH PATENT FLY ESCAPE. (Patented Aug. 16, 1892.) MADE IN EIGHT SIZES.



The only screen made that will keep a house free from flies. Any ordinary screen will keep flies out, but are just as effectual to keep them in. With this screen, while it will keep them out, it will also allow them to get out. As shown by the cut, the principle is the same as in the well-known balloon fly trap, constructed with openings in top of frame leading up and out. Flies light on the screen and follow the wire cloth up to these openings and thus find their way out. Flies will not go down through small openings and therefore will not return by the way they went out. Well and strongly made of hard wood finished in oil. Extensions are operated by steel springs so they can be placed either under or just on outside of sash. If placed outside of sash pressure of springs holds them in place and window can be raised and lowered without removing screen. Corners of screens covered and strengthened with iron caps as shown on cut. These caps are covered with a bronze paint, which while adding very much to the appearance of the screen, makes it the strongest and most durable window screen made.

Also EMPIRE SCREEN DOORS, With Patent Fly Escape, on same principle as Window Screens described above.

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Patented Aug. 26, 1886.

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Bucket cannot fall down.

Strap hooks under bottom of stave, goes over each hoop, and is securely riveted to side of bucket.

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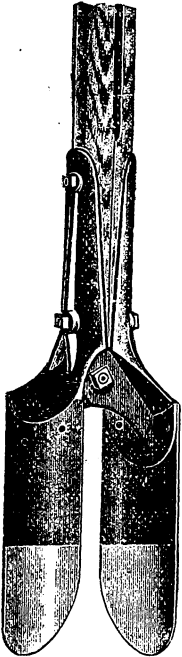
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"THE HUSTLER"

Post Hole Digger.

BUILT FOR BUSINESS.

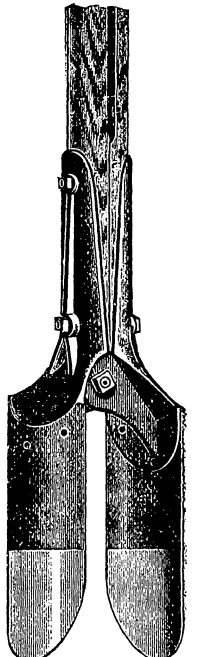
This tool combines simplicity with correct form for easy and rapid digging. It is neat in design, finely finished, strong and durable.

The single round handle opens in halves to operate, being easily grasped and less tiresome than two separate handles; all other movements of split handles are liable to pinch the operator's hands.

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The best materials only are used. Fully guaranteed.

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5 — Other Styles of Post Hole Diggers to — **5**
Suit all Soils.

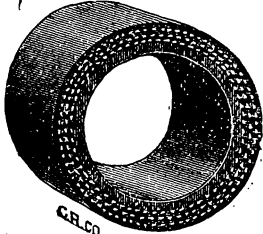
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Who Has Not Had Bad Hose ?

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PATENT SEAMLESS TUBE HOSE,

made by machinery, the tube run like lead pipe, through a die. There is no lapped tube, no seam, no cracks, no defects; water cannot get through to rot the duck and cause the hose to burst.

Made in All Sizes and Kinds of Garden, Engine, Steam, Fire, Brewers,' Cotton Hose, &c.

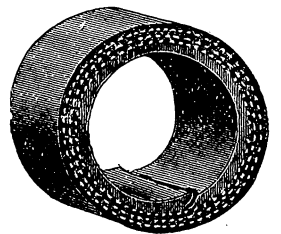
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SECOND EDITION, REVISED AND ENLARGED, WITH MULTIPLE INDEX (Patent Pending).

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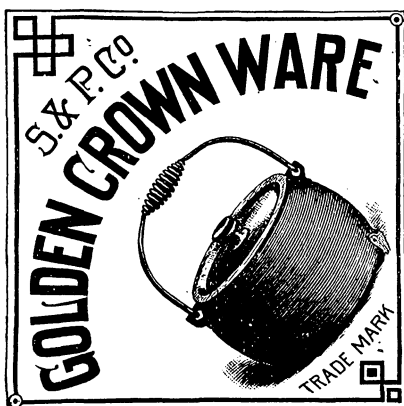
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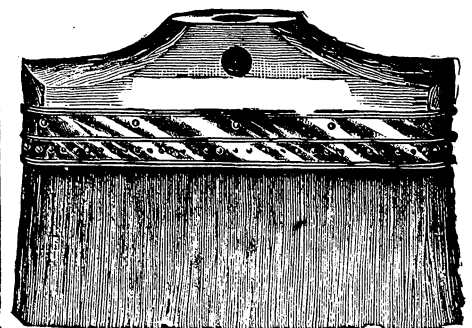
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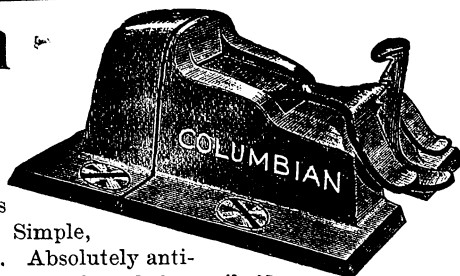
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RAPID GRINDERS that will STAND THE WEAR.

STEEL ALLOY BUHRS,

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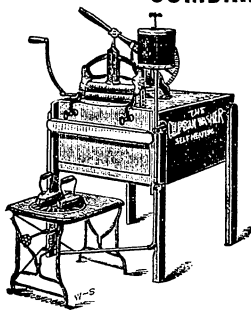
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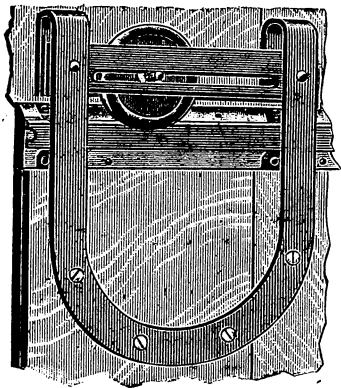
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The most complete washer on the market.

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WORLD'S
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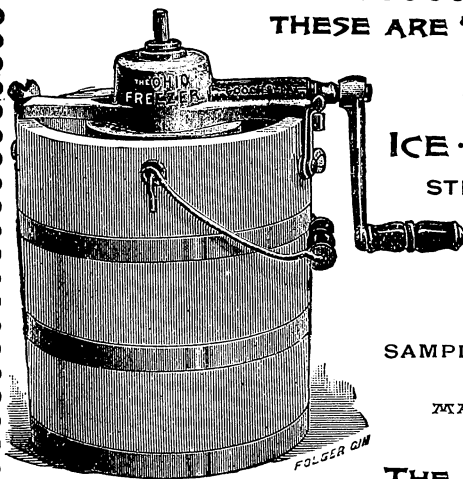
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STIRS FROM THE BOTTOM.

HAS ALL NEEDED MOTIONS—NO MORE.
NEVER TURNS BACK.

Has all the Good Points.
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SAMPLE on approval to responsible dealers, express prepaid, east of Kansas City.

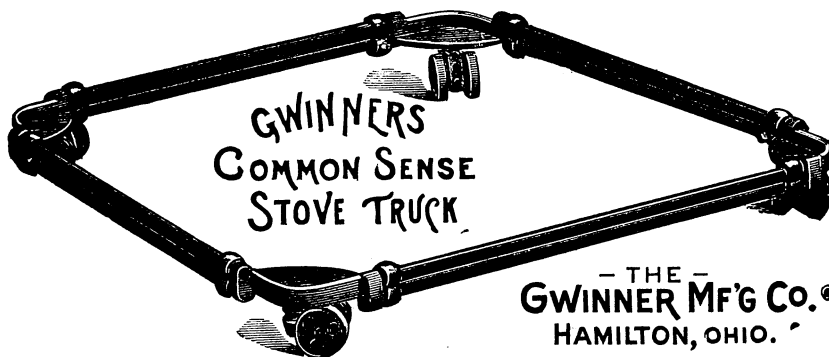
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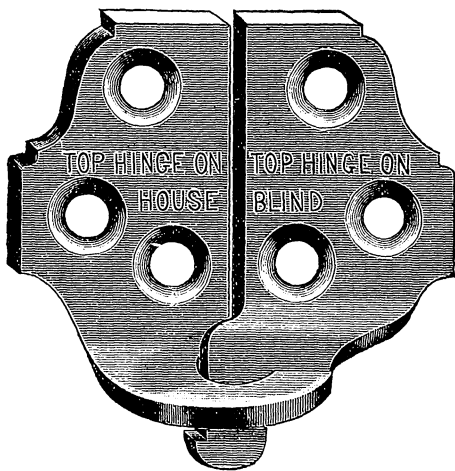
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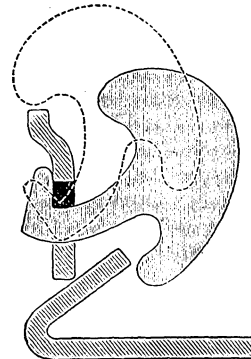
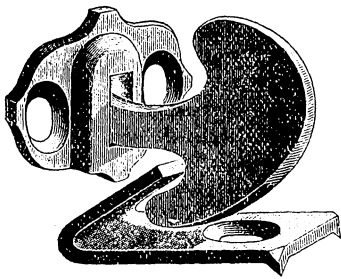
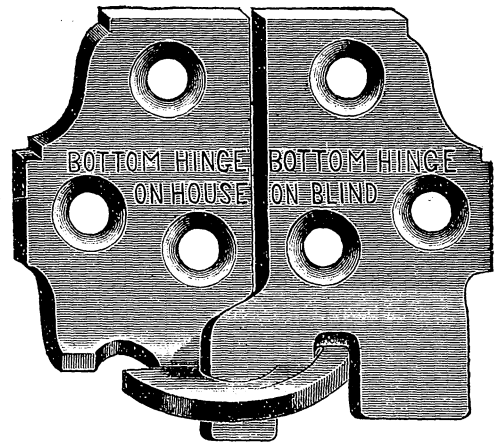
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**Butts, Hinges, Door Bolts, Blind Trimmings,
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FROM WROUGHT STEEL.**



**Wrought
Steel
Gravity
Blind
Hinges
FOR
Wood.
PATENTED.**



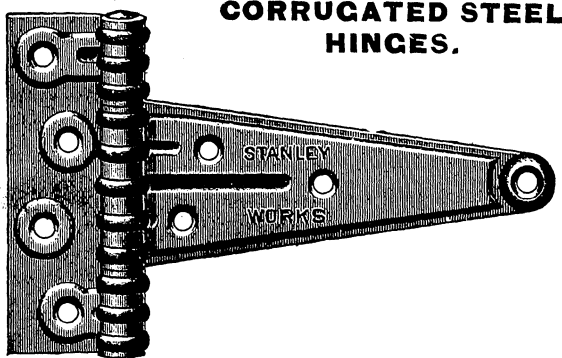
These Hinges lock the blind by the action of gravity, and, being made from heavy guages of wrought steel, will not break.

Their improved construction enables the blind to be securely locked when open and the hinge to be unlocked without lifting the blind.

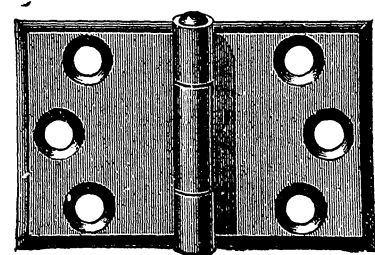
The improved sill catch prevents the closed blind from being opened from the outside.

These Hinges are applied in substantially the same manner as those ordinarily in use and require the same number and sizes of screws.

Each dozen set is packed in a neat paper box. Ten dozen sets in a case.



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HINGES.**



**WROUGHT STEEL
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ANYTHING MADE FROM WROUGHT STEEL.

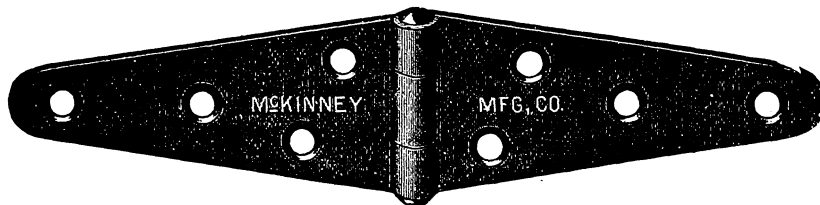
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"NONE BETTER."

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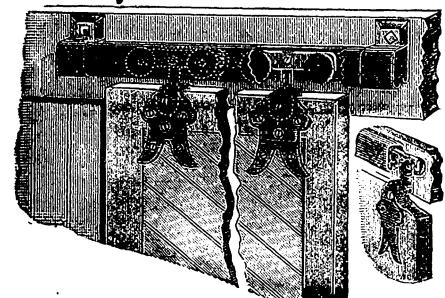
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— ON —

Parlor, Barn and Fire Door
Hangers.

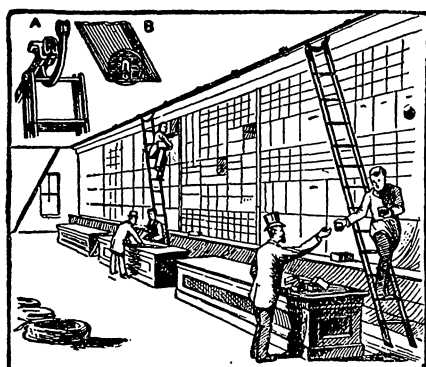
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COBURN TROLLEY TRACK MFG. CO.
HOLYOKE, MASS.



Barn Door with Lateral Adjustable Hanger. Very simple and cheap to apply.

We make four styles of ROLLING LADDERS to reach shelving of any height.



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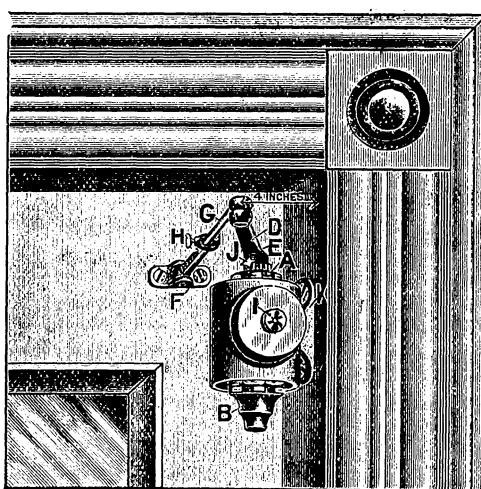
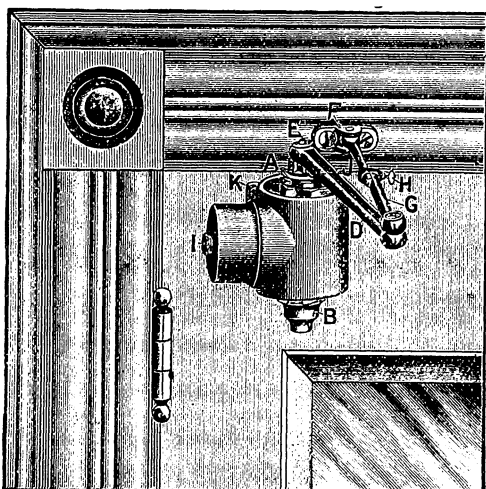
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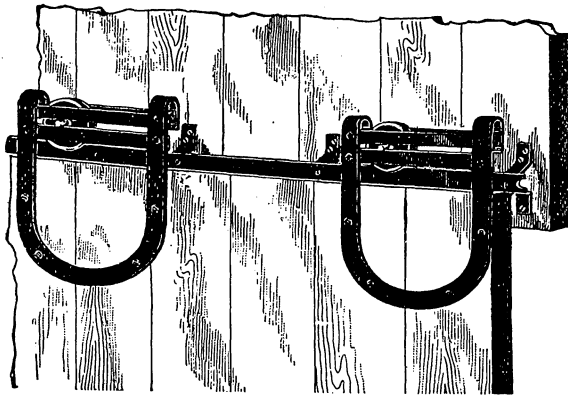


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LIQUID DOOR CHECKS AND SPRINGS,

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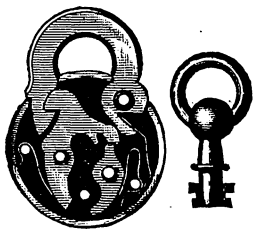
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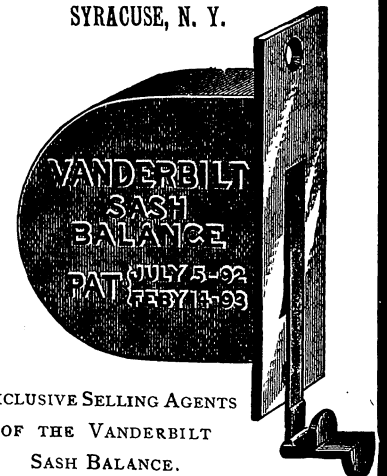
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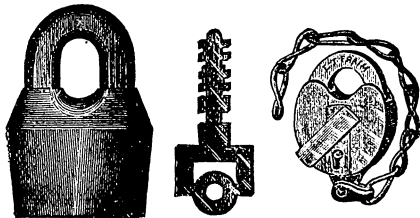
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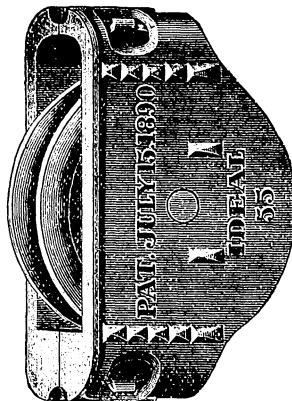
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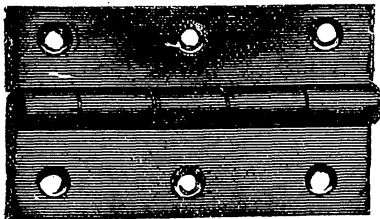
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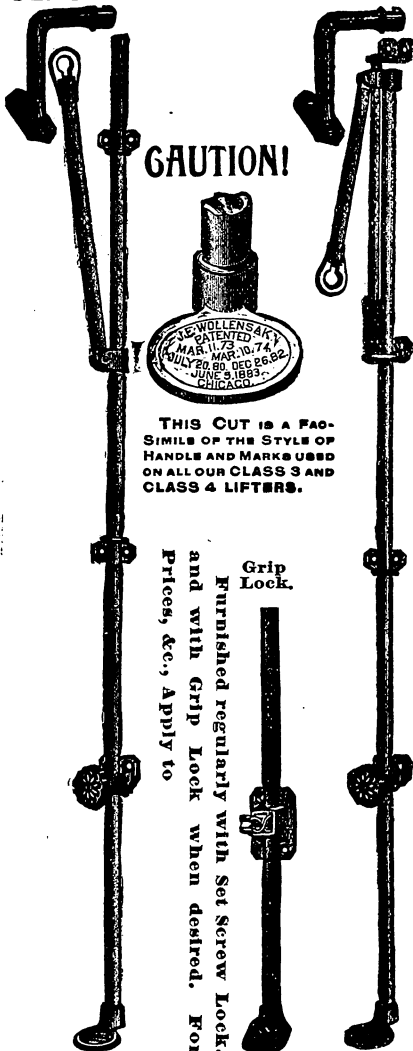
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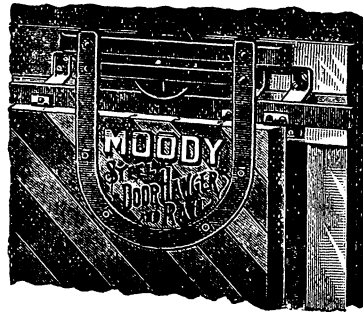
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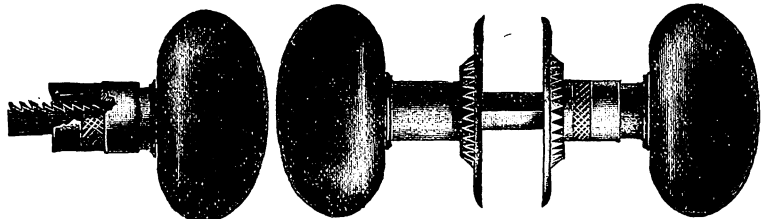


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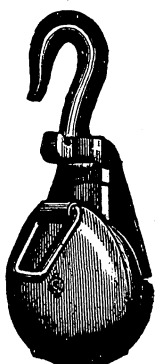
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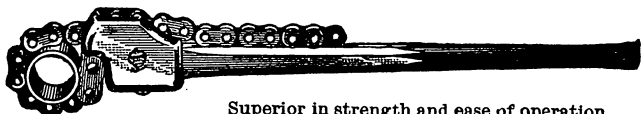
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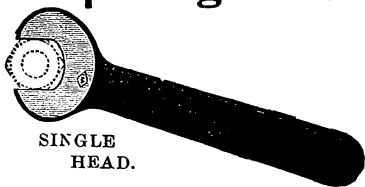
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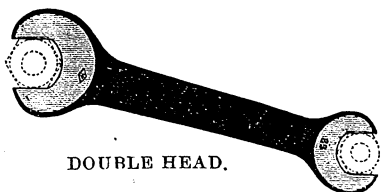
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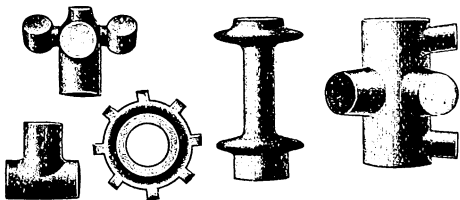


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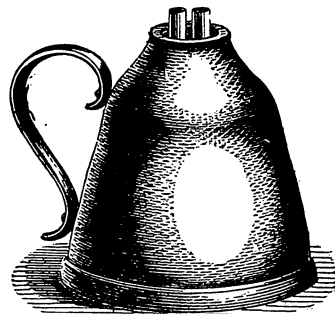
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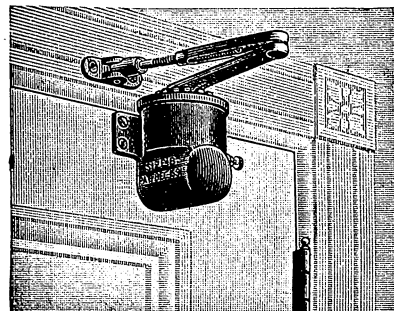
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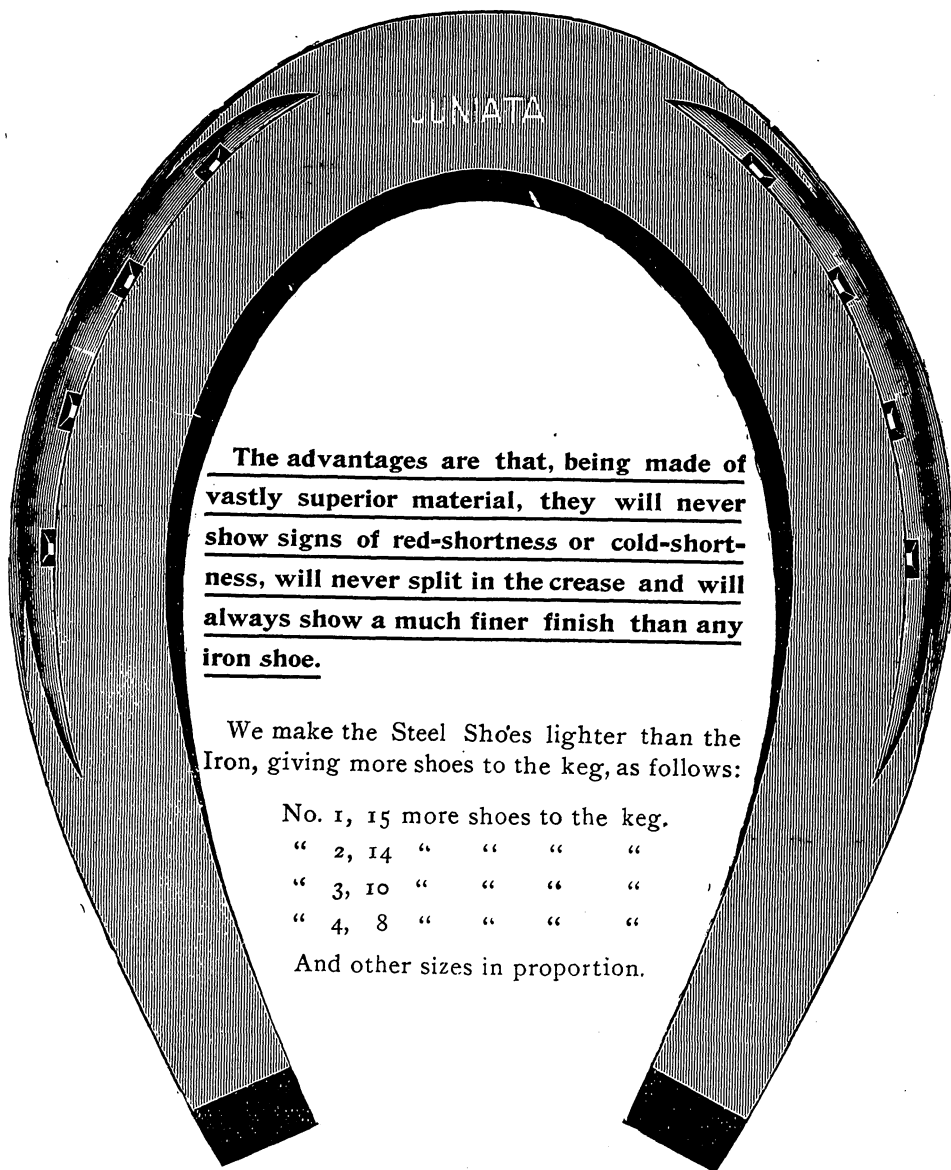
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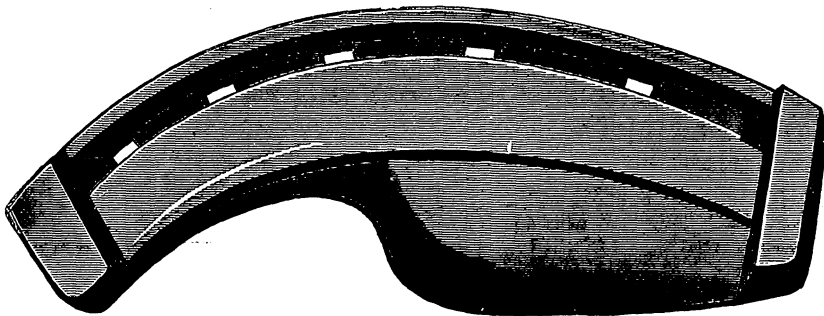
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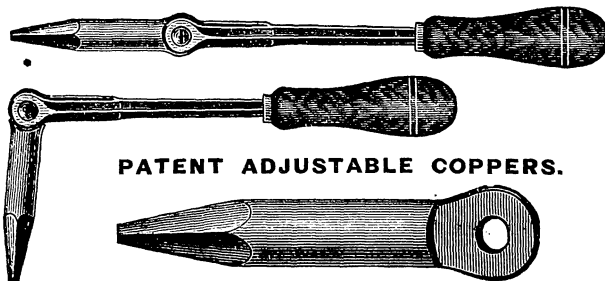
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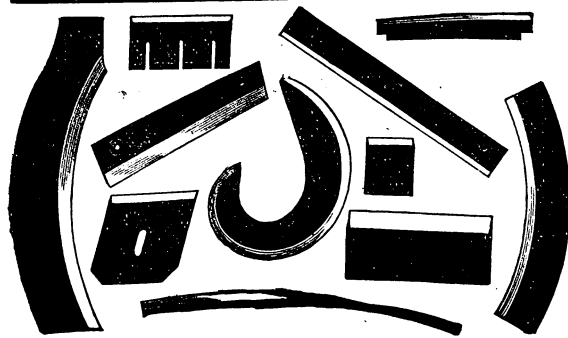
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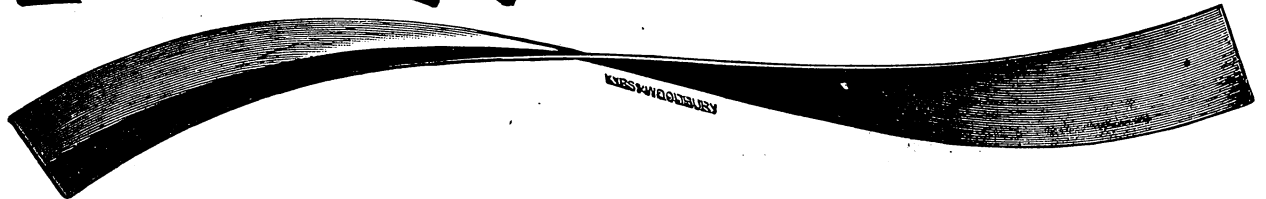
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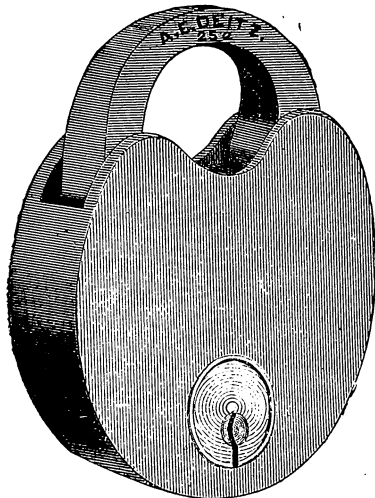
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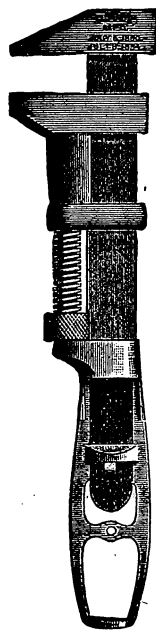
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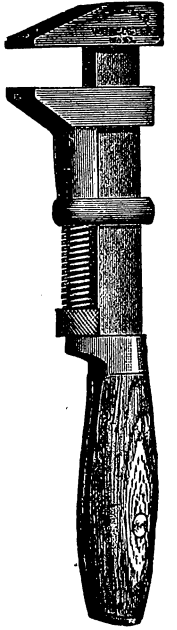


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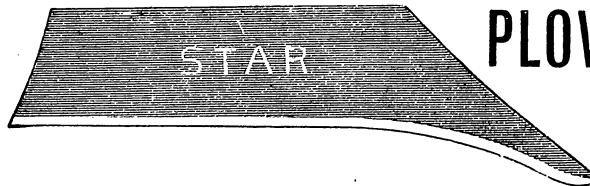
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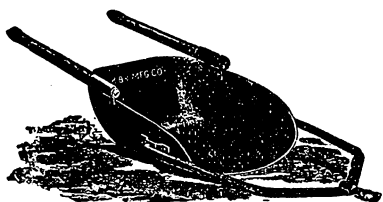
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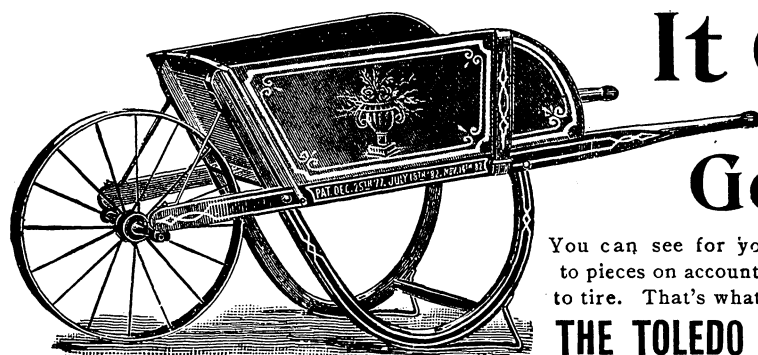
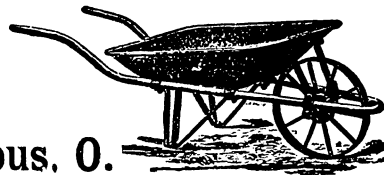
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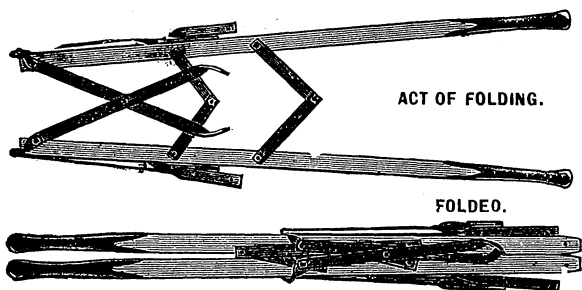


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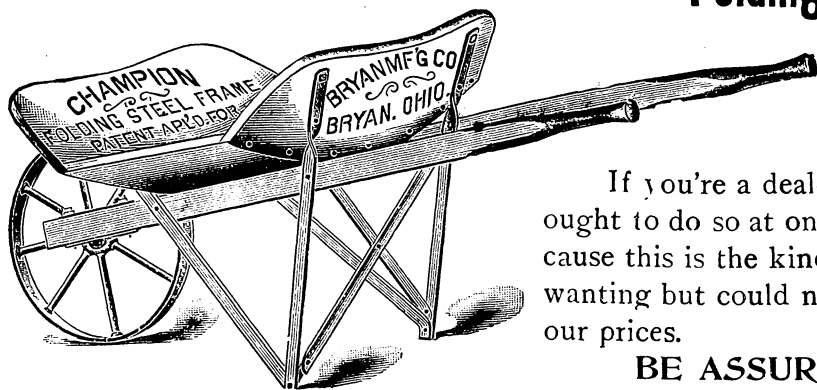
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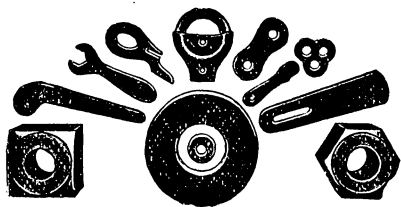
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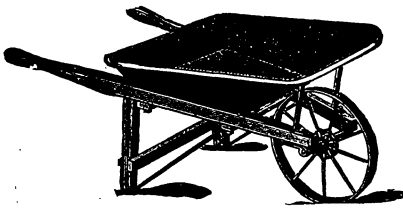


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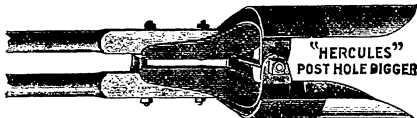
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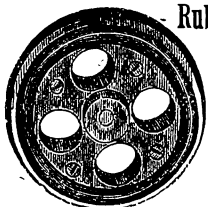
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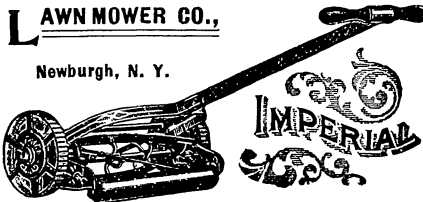


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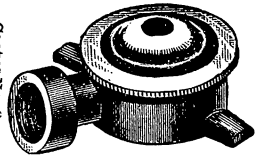


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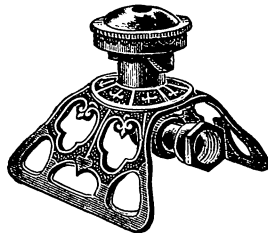
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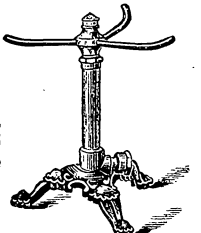


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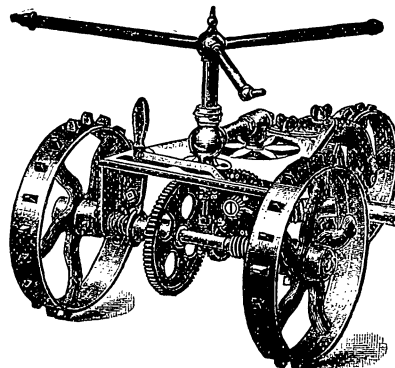
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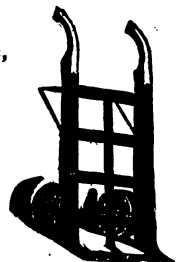
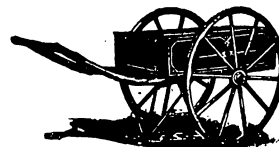
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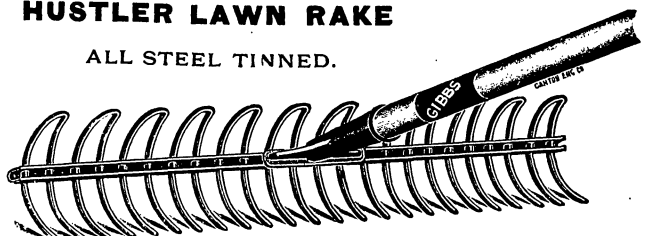
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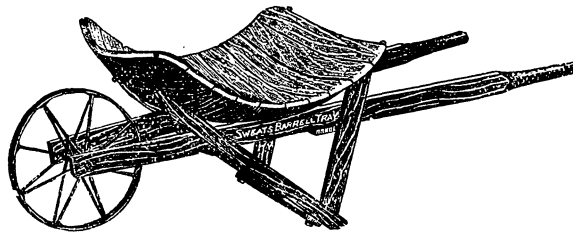
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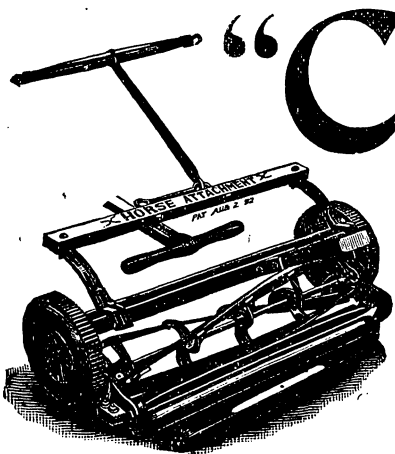
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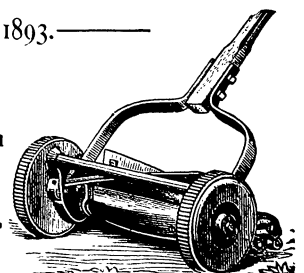
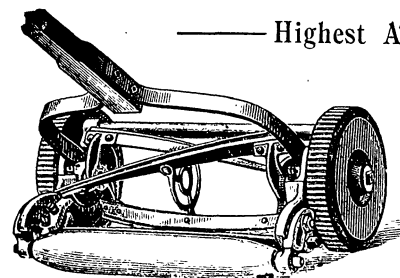
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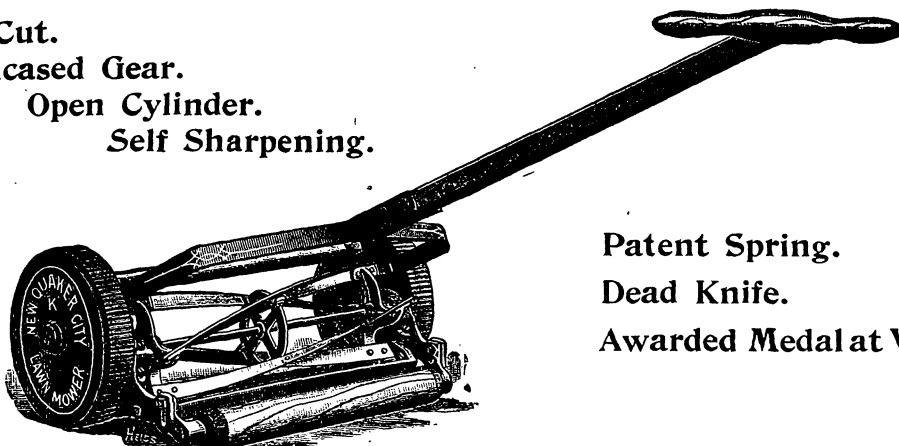
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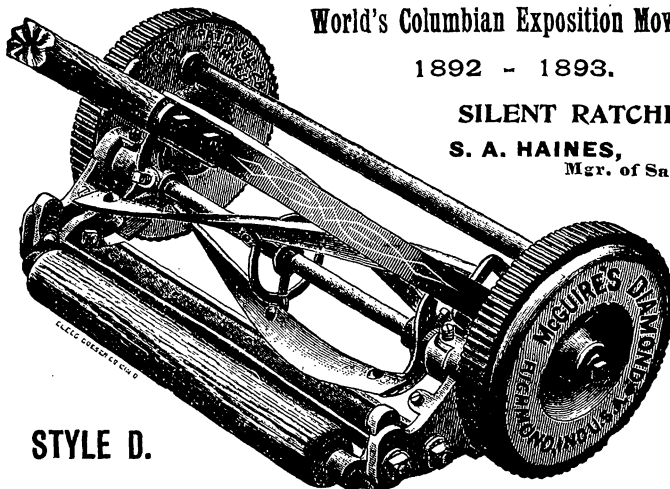
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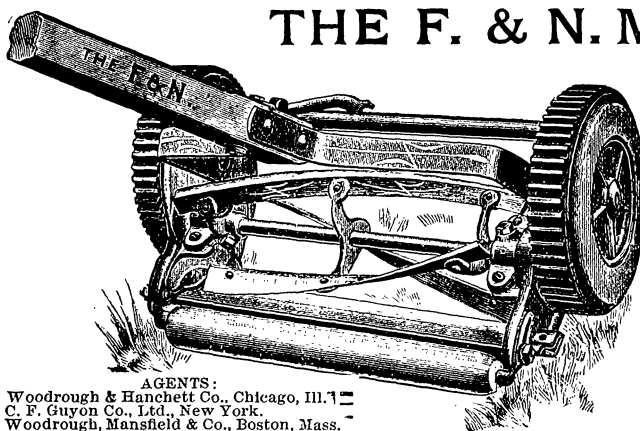
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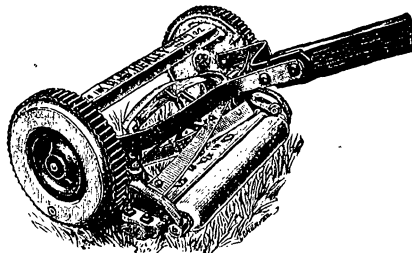
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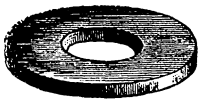
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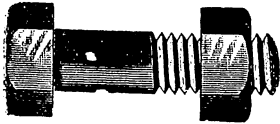
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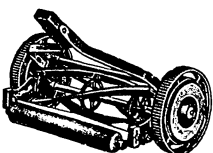
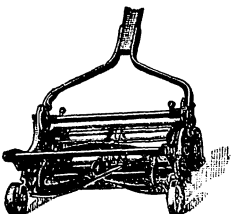
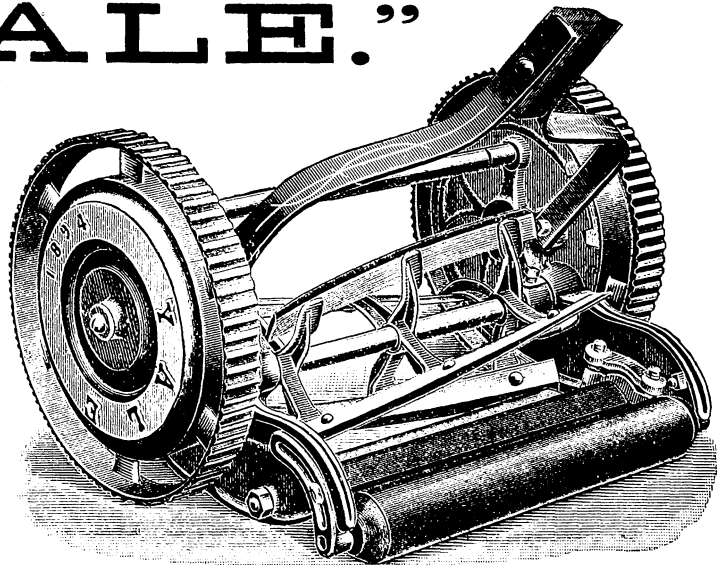
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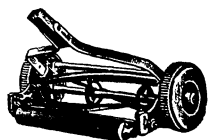
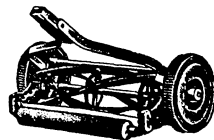


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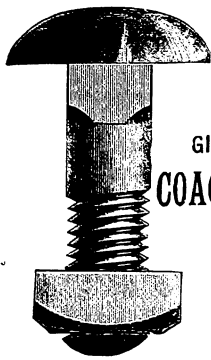
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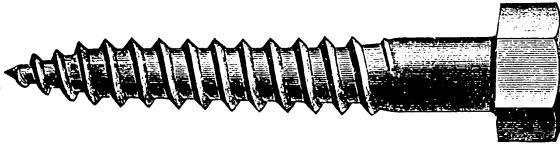
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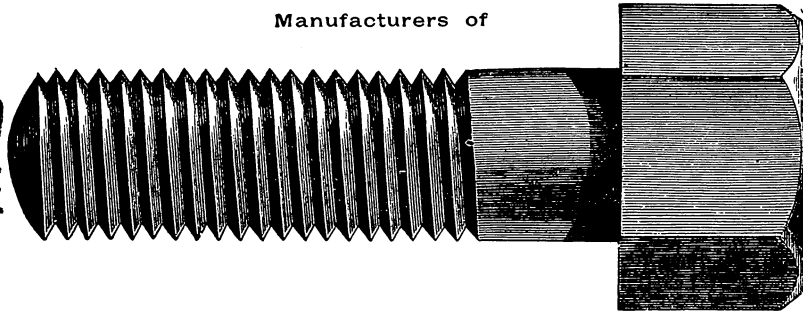
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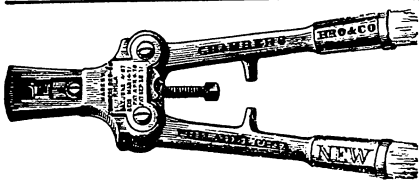


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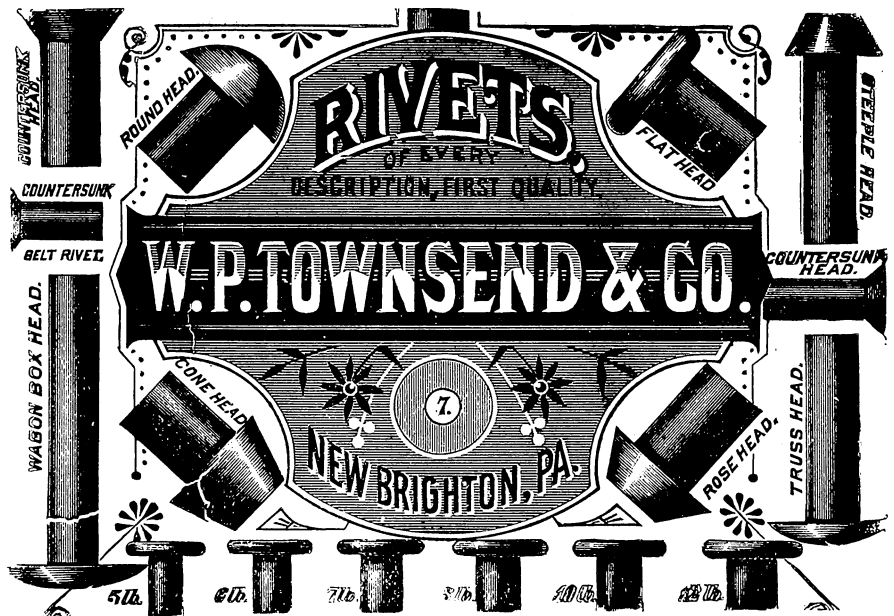
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- Auctioneers.**
Bissell, E. Son & Co., N. Y.
- Axes.**
Peck, A. G. & Co., Cohoes, N. Y.
- Axles, Springs, &c., Manufacturers of.**
Lander Steel Dept. of Cambria Iron Co., Johnstown, Pa.
Wurster, F. W., & Co., Brooklyn, N. Y.
- Babbitt Metal.**
Brown Smelting Co., Chester, Pa.
Hertz, T. & Son, St. Louis, Mo.
Keys, W. W. & R. M. Co., Bridgeport, Conn.
Reeves, Paul S., Philadelphia, Pa.
- Bakers and Roasters.**
Gronson Supply Co., Cleveland, Ohio.
- Bale Ties.**
Kilmer Mfg. Co., Newburg, N. Y.
- Barb Wire and Fence.**
Lander Steel Dept. of Cambria Iron Co., Johnstown, Pa.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
Lindlow-Saylor Wire Co., St. Louis, Mo.
Washington & Moen Mfg. Co., Worcester.
- Bar Iron, Manufacturers of.**
Lima-Standard Iron & Steel Co., Bridgeport, O.
Allentown Rolling Mill, Allentown, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Montour Iron & Steel Co., Danville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Sternberg, J. H. & Son, Reading, Pa.
- Bellows, Manufacturers of.**
Junkco Bellows Co., Cleveland, O.
Scott, Geo. M., Chicago, Ill.
- Bells.**
Devlin Bros. Mfg. Co., East Hampton.
- Belt Dressing.**
Dixon Crucible Co., Jersey City, N. J.
- Belt Fasteners.**
Crosby Co., Waterbury, Conn.
Claffen Mfg. Co., Cleveland, Ohio.
Talcott, W. O., Providence, R. I.
- Belting, Makers of.**
Alexander Bros., 412 N. 3d., Phila.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.
Main Belting Co., Philadelphia, Pa.
N. Y. Belting & Packing Co., Ltd., N. Y.
Roberts Mfg. Co., Pittsburgh, Pa.
Shultz Belting Co., St. Louis, Mo.
Stanley Works, New Britain, Conn.
- Bending Rolls.**
Wickes Bros., Saginaw, Mich.
- Bicycles and Bicycle Sundries.**
Devlin Bros. Mfg. Co., E. Hampton, Mass.
Bridgeport Gun Implement Co., 313-315 Broadway, New York.
Bronson Supply Co., Cleveland, O.
Eagle Bicycle Mfg. Co., Torrington, Ct.
Grand Rapids Cycle Co., Grand Rapids, Mich.
Haines & Zimmermann, 407 Cherry Street, Philadelphia.
Heath, S. F. Cycle Co., Minneapolis, Minn.
Indiana Bicycle Co., Indianapolis, Ind.
League Cycle Co., Hartford, Conn.
Lovell, Jno. P. Arms Co., Boston, Mass.
Monarch Cycle Co., Chicago, Ill.
- Pierce, Geo. N. & Co., Buffalo, N. Y.
Pope Mfg. Co., Boston, Mass.
Sawmill Wm. & Sons, Boston, Mass.
Stearns, E. C. & Co., Syracuse, N. Y.
Sterling Cycle Works, Chicago, Ill.
Stokes Mfg. Co., Chicago, Ill.
Toledo Metal Wheel Co., Toledo, O.
- Bicycle Pumps.**
Heath, S. F. Cycle Co., Minneapolis, Minn.
- Blocks, Tackle, Makers of.**
Cleveland Hook Co., Cleveland, O.
Fulton Iron & Engine Works, Detroit, Mich.
- Blowers.**
Junkco Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Huyett & Smith Mfg. Co., Detroit, Mich.
Sturtevant, B. F., & Co., Boston, Mass.
- Boiler Plates.**
Carbon Steel Co., Pittsburgh, Pa.
McIlvain, Wm. & Sons, Reading, Pa.
Lukens Iron & Steel Co., Coatsville, O.
Pottstown Iron Co., Pottstown, Pa.
- Boilers, Copper.**
Sandwich & Clowes, Waterbury, Conn.
- Boilers, Steam.**
Junkco & Wuxco Co., 30 Cortlandt, Chandler & Taylor Co., Indianapolis, Ind.
Edge Moor Iron Co., Wilmington, Del.
Fulton Steam Boiler Works and Fdry., Richmond, Ind.
Harrison Safety Boiler Wks., Phila., Pa.
Phoenix Iron Works Co., Meadville, Pa.
Pollock, W. B. & Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Phila., Pa.
Sterling Co., Chicago, Ill.
Wetherill, Robt. & Co., Chester, Pa.
- Bolt Cutters.**
Cambers Bros. Co., Philadelphia.
Howard Iron Works, Buffalo, N. Y.
Porter, H. K., Boston, Mass.
Reece, Edw. F., Greenfield, Mass.
Wells Bros. Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Books.**
Williams, David, 96-102 Reade N. Y.
Wolcott & West, Syracuse, N. Y.
- Boring Machines.**
Buckeye Mfg. Co., Union City, Ind.
- Boxes, Hdw. Shelf, &c.**
Arcece A. & Z. Park Place, N. Y.
Jones, Jesse & Co., Philadelphia, Pa.
- Brass, Manufacturers of.**
Ansonia Brass & Copper Co., N. Y.
David, John & Sons, 190 John, N. Y.
Plum & Atwood Mfg. Co., N. Y.
Randolph & Clowes, Waterbury, Conn.
Rome Brass & Copper Co., Rome, N. Y.
Seavill Mfg. Co., Waterbury, Conn.
Waterbury Brass Co., 236 B'way, N. Y.
- Brass Butt Hinges.**
Tiebout, W. & J., 16 & 18 Chambers.
- Brass Founders.**
East, Fox & Co., Pittsburgh, Pa.
Cramp, Wm. & Sons, S & E. B. Co., Philadelphia, Pa.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Fralin, E. T., Lancaster, Pa.
Haight & Clark, Albany, N. Y.
Keys, W. W. & R. M. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Phila., Pa.
Reeves, Paul S., Philadelphia.
- Brass Goods.**
Crass Goods Mfg. Co., 88 Chambers.
- Bread and Cake Knives.**
Clausen Shear Co., Fremont, O.
- Bridge Builders.**
Berlin Iron Bridge Co., East Berlin, Ct.
- Bronze (Tobin).**
Ansonia Brass & Copper Co., 19-26 Cliff Street, N. Y.
- Brooms and Brushes.**
Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.
Cincinnati Mfg. Co., Cincinnati, O.
Lav. Jos. & Co., Ridgeville, Ind.
- Builders' Hardware.**
Corbin, P. & F., New Britain, Conn.
Deitz, A. E., 97 Chambers St., N. Y.
Reading Hdw. Co., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.
- Butchers' Steels.**
Chas. John & Sons, 85-89 Cliff St., N. Y.
Hoffman, C. & A., Philadelphia, Pa.
- Butcher and Shoe Knives, Manufacturers of.**
Cauldon, John & Sons, 85-89 Cliff St., N. Y.
Goodell Co., Antrim, N. H.
Wilson, John, Sheffield, England.
- Butts and Hinges.**
Clark Mfg. Co., Buffalo, N. Y.
McKinney Mfg. Co., Allegheny, Pa.
Shoe Machine Co., Montpelier, Vt.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.
- Calipers and Dividers.**
J. Stevens Arms and Tool Co., Chicopee Falls, Mass.
Starrett, L. S., Athol, Mass.
- Car Axles.**
Roberts, A. & P. & Co., Phila.
- Carboy Stands.**
Hillebrand & Wolf, Philadelphia, Pa.
- Carriage Hardware, Makers of.**
Cover's Saddlery Works, Farmer, N. Y.
McCles, Richard, Auburn, N. Y.
McKinnon Dash & Hdw. Co., Ltd., Buffalo, N. Y.
Scranton Forging Co., Scranton, Pa.
Smith, H. D. & Co., Plantville, Conn.
Wileox & Howe Co., Birmingham, Conn.
- Cartridge Reloading Tools.**
Ideal Mfg. Co., New Haven, Conn.
- Casters, Wheel, &c.**
Clark, G. P., Windsor Locks, Conn.
- Castings Cleaning Apparatus.**
Tilghmans Patent Sand Blast Co., Ltd., Sheffield, England.
- Castings, Iron and Steel.**
Booth, The Lloyd Co., Youngstown, O.
The Burr & Houston Co., Brooklyn, N. Y.
Cheney, S. & Son, Manlius, N. Y.
Chester Steel Casting Co., Phila.
Chrome Steel Works, Brooklyn, N. Y.
Eureka Cast Steel Co., Chester, Pa.
Flag, Stanley G. & Co., Phila.
Garland Foundry Co., Cleveland, O.
Haight & Clark, Albany, N. Y.
King & Andrews Co., Chicago, Ill.
Palmer & De Mooy, Cleveland, O.
Pownall, F. H., Jamesburg, N. J.
Pratt & Cady Co., Hartford, Conn.
Sessions Foundry Co., Bristol, Conn.
Spencer's I. S., Sons, Guilford, Conn.
Standard Fdry. & Mfg. Co., Cleveland, O.
Standard Steel Casting Co., Thurlow, Pa.
Totten & Hogg Iron & Steel Fdry Co., Philadelphia, Pa.
Union Lock & Hdw. Co., Ltd., Lancaster, Pa.
Western Fdry. Co., Chicago, Ill.
Wetherill, Robt. & Co., Chester, Pa.
- Castings, Malleable.**
Arcade Malleable Iron Co., Worcester
- Chains.**
Bradley & Co., Philadelphia.
Kelley & McBean, Niagara Falls, N. Y.
Link-Belt Engineering Co., Phila., Pa.
McKay, Jas. & Co., Pittsburgh, Pa.
- Chimneys.**
Phila. Engineering Works, Phila., Pa.
- Chisels, Manufacturers of.**
Shook Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
White, L. & I. J. Co., Buffalo, N. Y.
- Chucks.**
Cushman Chuck Co., Hartford, Conn.
Hoggeson & Pettis Mfg. Co., New Haven, Conn.
Smith & Egge Mfg. Co., Bridgeport, Union Mfg. Co., 103 Chambers, N. Y.
Whitton, D. E. Mach. Co., New London, Conn.
- Clamps.**
Hammer & Co., Branford, Conn.
Le Count, C. W., So. Norwalk, Conn.
- Coal.**
Sarns, C. K. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.
- Coffee and Spice Mills.**
Sun Mfg. Co., Greenfield, O.
- Coke.**
Sarns, C. K. & Co., Philadelphia, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Rainey, W. J., Cleveland, O.
Wister, Francis, Philadelphia, Pa.
- Collections.**
Hardware Board of Trade (Limited) 4 and 6 Warren, N. Y.
- Condensers.**
Wright, Henry R., 86 & 88 Liberty Street, N. Y.
- Conveying Machinery.**
Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
Jeffrey Mfg. Co., Columbus, O.
Link Belt Engineering Co., Phila., Pa.
- Copper.**
Ames Sword Co., Chicopee, Mass.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
New Haven Copper Co., 204 Pearl, N. Y.
Randolph & Clowes, Waterbury, Conn.
Rome Brass & Copper Co., Rome, N. Y.
Wister, Francis, Philadelphia, Pa.
- Cordage.**
Samson Cordage Works, Boston, Mass.
- Cork Screws.**
Williamson, C. T. Wire Novelty Co., Newark, N. J.
- Corrugated Furnaces.**
Continental Iron Works, Brooklyn, N. Y.
- Corrugated Iron.**
Cincinnati Corrugating Co., Piqua, O.
Cambridge Roofing Co., Cambridge, Mass.
Moseley Iron Bridge & Roof Co., 5 Day, N. Y.
N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.
- Counting Machines.**
Durant, W. N., Milwaukee, Wis.
- Coverings, Boiler and Pipe.**
Johns, H. W. Mfg. Co., 57 Maiden Lane
- Cranes.**
Detroit Foundry Equipment Co., Detroit, Mich.
Halsey, W. S. & Co., Birdsboro, Pa.
Harrington, E. Son & Co., Phila., Pa.
Maris & Beekley Philadelphia, Pa.
Ridgway, Craig & Sons, Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Yale & Towne Mfg. Co., Stamford, Conn.
- Credits.**
Ealy, Jno. W. Co., 278-280 B'way, N. Y.
- Cupolas, Hot Blast.**
Byram & Co., Detroit, Mich.
Detroit Fdry. Equipment Co., Detroit, Mich.
- Curry Combs.**
Gibbs Mfg. Co., Canton, O.
- Cutlery Cases.**
Torrey, J. R. & Co., Worcester, Mass.
- Cutlery Enamel.**
Shipley, A. B. & Son, Phila., Pa.
- Cutlery, Importers of.**
Field, Alfred & Co., 93 Chambers St., New York.
Gurney, Fred B., 116 Chambers St., N. Y.
Sickles, Sweet & Lyon, 35 Barclay, N. Y.
- Cutlery, Manufacturers of.**
Junknam, W. Co., Cleveland, Ohio.
Clausen Shear Co., Fremont, O.
Dane, Stoddard & Kendall, Boston, Mass.
Goodell Co., Antrim, N. H.
Northampton Cutlery Co., Northampton, Mass.
Wilson, John, Sheffield, England.
- Cyclometers.**
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
- Dashes and Fenders.**
McKinnon Dash & Hdw. Co., Ltd., Buffalo, N. Y.
- Dies.**
Wilson, J. Fred, Worcester, Mass.
- Die Forgings and Castings.**
Bissell, E. W. Co., Brooklyn, N. Y.
- Dog Collars.**
Kelley & McBean, Niagara Falls, N. Y.
Union Hardware Co., Torrington, Ct.
- Door Checks and Springs.**
Bardsley, J., 149 & 151 Baxter St., N. Y.
Corbin, F. & F., New Britain, Conn.
- Door Knobs.**
Perry & Whipple Co., New Haven, Ct.
- Drain Cleaners.**
Buckeye Mfg. Co., Union City, Ind.
- Drilling Machines.**
Sickford Drill & Tool Co., Cinn., Ohio.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower and Forge Co., Lancaster, Pa.
Colburn, A. M., New Haven, Conn.
Dallet, Thos. H. & Co., Philadelphia.
Dwight Slate Machine Co., Hartford, Conn.
Goddard, Asa, Worcester, Mass.
Halsey, Jas. T., Philadelphia, Pa.
Hamilton Mch. Tool Co., Hamilton, O.
Herrick & Cowell, New Haven, Conn.
Norton & Jones Machine Tool Works, Plainville, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Woodward & Rogers, Hartford, Conn.
- Drop Forgings.**
Blunings & Spencer Co., Hartford, Conn.
Boone, W. O. Mfg. Co., Boonton, N. J.
Eccles, Richard, Auburn, N. Y.
Merrill Bros., Brooklyn, N. Y.
Miner & Peck Mfg. Co., New Haven, Ct.
Phila. Drop Forge Co., Philadelphia, Pa.
Scranton Forging Co., Scranton, Pa.
Splers, J. C. & Co., Worcester, Mass.
Williams, J. H. & Co., Brooklyn, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
Wyman & Gordon, Worcester, Mass.
- Drop Presses.**
Bliss, E. W. Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J.
Miner & Peck Mfg. Co., New Haven, Conn.
Stiles & Parker Press Co., Brooklyn, N. Y.
Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.
- Dumb Waiters.**
Gorm Mfg. Co., Newark, N. J.
- Dust Benders.**
Reabody & Parks, Troy, N. Y.
- Dynamite.**
New York Powder Co., 62 Liberty St., N. Y.
- Dynamos.**
J. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Zucker & Levett Chemical Co., 10 to 14 Grand St., N. Y.
- Edge Tools, Makers of.**
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
Humb, Fayette R., Philadelphia, Pa.
White, L. & I. J. Co., Buffalo, N. Y.
- Edging Shears.**
Dille & McGuire Mfg. Co., Richmond, Ind.

See Alphabetical Index, Pages 105 & 106.

- Egg Beaters.**
North Bros. Mfg. Co., Philadelphia
- Electric Bells and Supplies.**
Ostrander, W. R. & Co., 204 Fulton St. New York
Wollensak, J. F., Chicago, Ill.
- Electric Dynamo Machines.**
Edy Electric Mfg. Co., Windsor, Conn.
Hanson & Van Winkle Co., Newark, N. J.
- Elevators, Makers of.**
Lambert Engineering Co., Phila.
Morse, Williams & Co., Phila.
Warner Elevator Mfg. Co., Cincinnati, O.
- Emery and Emery Wheels.**
N. Y. Belting & Packing Co., Ltd., Northampton Emery Wheel Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Sturtevant Mill Co., Boston, Mass.
Tanite Co., Stroudsburg, Pa.
- Emery Wheel Dressers.**
Bay State Stamping Co., Worcester, Mass.
- Enamels.**
Nubian Iron Enamel Co., Cragin, Ill.
- Engineers and Contractors.**
Aiken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. J., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
Lean, D. B. Co., Pittsburgh, Pa.
McClure, Amster & Co., Pittsburgh, Pa.
Pittsburgh Iron Steel Engineering Co., Pittsburgh, Pa.
Smythe, S. K. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
- Engines, Gas.**
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg. N. Y.
- Engines, Steam, Makers of.**
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Chandler & Taylor Co., Indianapolis, Ind.
Erie Engine Works, Erie, Pa.
Lane & Bodley Co., Cincinnati, O.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Phoenix Iron Wks. Co., Meadville, Pa.
Southwick Foundry and Machine Co., Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.
- Exhaust Tumblers.**
Sweetser, W. A., Brockton, Mass.
- Expansion Belts.**
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O.
Steward & Romaine Mfg. Co., Phila., Pa.
- Faucets, Self-Measuring.**
Lane Bros., Poughkeepsie, N. Y.
- Faucets, Wooden, Makers of.**
John Sommer's Son, Newark, N. J.
- Feed-Water Heaters.**
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N. Y.
Harrison Safety Boiler Wks., Phila., Pa.
National Pipe Bending Co., New Haven, Conn.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Webster, Warren & Co., Camden, N. J.
Whitlock Coll Pipe Co., Elmwood, Conn.
- Fence Ratchet.**
Stauffer, J., Dayton, Ohio.
- Fencing, Iron and Wire.**
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 42 Cliff St., New York
Kilmer Mfg. Co., Newburgh, N. Y.
McCallip Fence & Wire Works, Columbus, O.
Mast, Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
- File Cards.**
Frasse Co., 19 Warren St., N. Y.
- Files, Importers of.**
Moss, F. W., 80 John, N. Y.
- Files and Rasps, Manufacturers of.**
Arcade File Works, Anderson, Ind.
Barker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
- Fire Brick, Makers of.**
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer B & Sons, 100 E. Houston, St. Louis
McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Solomon, Jno. M., Wilmington, Del.
Valentine, M. D. & Bro., Woodbridge, Mass.
- Fishing Tackle.**
Fame, Sturgis & Kendall, Boston, Mass.
- Flint.**
Crystal Mills Co., Chester, Mass.
- Flint and Emery Paper.**
Baeder, Adamson & Co., Phila., Pa.
- Flour Sifters.**
Meyers, F. J. Mfg. Co., Hamilton, O.
- Fly Traps.**
Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.
- Flue Cleaners.**
Mackey, Jas. T., St. Louis, Mo.
- Fodder Cutters.**
Silver Mfg. Co., Salem, O.
- Forges, Portable, &c.**
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Foss Mfg. Co., Springfield, Ohio.
Hartevant, B. F. Co., Boston, Mass.
- Forgings, Iron and Steel.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel-Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila., Pa.
Horton Forging Co., Scranton, Pa.
U. S. Projectile Co., Brooklyn, N. Y.
- Foundry Facings.**
Dixon, Jos., Crucible Co., Jersey City, N. J.
Duermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cin., O.
Solomon, Jno. M., Wilmington, Del.
- Foundry Riddles.**
Estey, W. S., 65 Fulton, N. Y.
- Foundry Supplies.**
Diamond Clamp & Flask Co., Richmond, Ind.
Duermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cin., O.
- Friction Clutches.**
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.
- Friction Cone.**
Evans Friction Cone Co., Boston, Mass.
- Furnaces, Foundry.**
Syram & Co., Detroit, Mich.
- Gas Producers.**
Wood, R. D. & Co., Philadelphia, Pa.
- Gas & Steam Fitters' Supplies.**
Pancoast, Henry B. & Co., Phila., Pa.
- Gauge, Rolling Mill.**
Haines Gauge Co., Philadelphia, Pa.
- Gear Cutters.**
D. & Whiton Mach. Co., New London, Conn.
- Gears.**
Boston Gear Works, Boston, Mass.
Poole, Robt. & Son Co., Baltimore, Md.
U. S. Projectile Co., Brooklyn, N. Y.
- Glass Boards.**
Canton Saw Co., Canton, O.
- Glass Cutters.**
Monce, S. G., Bristol, Conn.
- Glue.**
Baeder, Adamson & Co., Phila., Pa.
Dodd, A. W. & Co., Gloucester, Mass.
Russell Cement Co., Gloucester, Mass.
- Grass Catchers.**
Supple Hardware Co., Phila., Pa.
- Grinding and Polishing Machines.**
Herrick & Cowell, New Haven, Conn.
Norton Emery Wheel Co., Worcester, Mass.
- Grinding Mills.**
Foss Mfg. Co., Springfield, O.
- Grindstone Dressing Machinery.**
Blake & Johnson, Waterbury, Conn.
- Grindstones.**
Cleveland Stone Co., Cleveland, O.
- Gun Implements.**
Union Hdw. Co., Torrington, Conn.
- Gunpowder, Makers of.**
Ladlin & Rand Powder Co., 29 Murray St., N. Y.
- Hand Carts.**
Lansing Wheelbarrow Co., Lansing, Mich.
- Handles.**
New York Mallet and Handle Wks., 458 E. Houston St., N. Y.
- Handle Couplings.**
Bourke Mfg. Co., Youngstown, O.
- Hangers, Door.**
Chicago Spring Butt Co., Chicago, Ill.
Coburn Trolley Truck Mfg. Co., Holyoke, Mass.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.
- Hardware Comm'n Merchants.**
Joscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.
- Hardware Manufacturers.**
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn.
- Hardware Mfrs.' Agents.**
Bingham, W. Co., Cleveland, O.
Clarke, Thomas, St. John, N. B.
Graham, John H. & Co., 113 Chambers, St. Louis
Stickler & Sweet & Lyon, 35 Barclay, N. Y.
- Hardware Specialties.**
Acme Shear Co., Bridgeport, Conn.
Berger Bros., Philadelphia, Pa.
Clark Mfg. Co., Buffalo, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Gwinner Mfg. Co., Hamilton, O.
Haines & Zimmerman, Phila., Pa.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Philadelphia, Pa.
Peabody & Parks, Troy, N. Y.
Scranton Co., New Haven, Conn.
Wilson, J. Fred, Worcester, Mass.
- Harness Snaps.**
Covert Mfg. Co., West Troy, N. Y.
Cover's Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.
- Hoisting Machines.**
Box, Alfred & Co., 314 Green, Phila.
J. W. Hoisting & Conveying Mch. Co., Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 86 Liberty, N. Y.
McCoy, Jos. F. & Co., 28 Warren St. Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis.
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speldel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.
- Hollow Ware.**
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Stuart & Peterson Co., Phila., Pa.
- Hollow Ware, Aluminum.**
Illinois Pure Aluminum Co., Lemont, Ill.
- Horse Nails, Makers of.**
Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.
- Horse and Mule Shoes, Makers of.**
Bryden Horse Shoe Co., Catsanqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.
- Hose.**
Cleveland Rubber Works, Cleveland, O.
N. Y. Belting & Packing Co., Ltd., 10 Park Row, N. Y.
- Hose Clamps.**
Clancy, J. R., Syracuse, N. Y.
- Hydrants, &c.**
McLean, John, 296 & 298 Monroe, N. Y.
- Hydraulic Forging.**
U. S. Projectile Co., Brooklyn, N. Y.
- Hydraulic Jacks.**
Dudgeon, Richard, 24 Columbia, N. Y.
McCoy, Jos. F. Co., 28 Warren St., N. Y.
Watson & Stillman, 204 E. 43d, N. Y.
- Ice Breakers.**
Clement & Dunbar, Philadelphia, Pa.
Wharton, J. S. Lovering, Phila., Pa.
- Ice Cream Freezers.**
Clement & Dunbar, Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
Tatum, S. C. & Co., Cincinnati, Ohio.
White Mountain Freezer Co., Nasau, N. H.
- Injectors.**
Kynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York.
Sherwood Mfg. Co., Buffalo, N. Y.
- Insurance, Boiler.**
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.
- Iron and Steel, Swedish.**
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y.
- Iron Commission Brokers.**
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Barclay W. & Co., Phila.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia, Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Levy, J. & Co., Philadelphia.
Lea, Tatum & Co., Philadelphia.
Mohr, J. J., 480 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Wister, L. & R. Co., Phila., Pa.
- Iron Ore.**
Samuel, Frank, Philadelphia, Pa.
- Iron, Merchants.**
Barnes, C. K. & Co., Philadelphia, Pa.
Borden & Lovell, 70 West, N. Y.
Bussell & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Barclay W. & Co., Phila.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 440 West St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St., N. Y.
Petersen & Co., 29 Broadway, N. Y.
Thompson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. B. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.
- Iron, Importers.**
Abbott Wheelock & Co., N. Y. and Boston.
Lundberg, Gustaf, Boston, Mass.
- Iron Sheet, Manufacturers of.**
Cambridge Iron & Steel Co., Cambridge, Ohio.
W. Dewees Wood Co., Lima, McKeesport, Pa.
- Iron Vases.**
Walbridge & Co., Buffalo, N. Y.
- Ironwork, Ornamental.**
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
- Keys.**
Wollensak, J. F., Chicago, Ill.
- Ladders, Rolling.**
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
- Ladles.**
Detroit Fdy. Equipment Co., Detroit, Mich.
- Lamps.**
Plume & Atwood Mfg. Co., New York.
Standard Lighting Co., Cleveland, O.
- Lamp Stoves.**
Glazier Stove Co., Chelsea, Mich.
Plume & Atwood Mfg. Co., 18 Murray Street, New York.
- Lanterns.**
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Lathes.**
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Lathing, Wire.**
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Laundry Machines.**
Johnson, S. C., Racine, Wis.
- Lawn Mowers.**
Blair Mfg. Co., Springfield, Mass.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Champion Mfg. Co., Richmond, Ind.
Coldwell Lawn Mower Co., Newburg, N. Y.
Dille & Anderson, Richmond, Ind.
Dille & McGuire Mfg. Co., Richmond, Ind.
Enterprise Mfg. Co., Philadelphia, Pa.
F. & N. Mfg. Co., Richmond, Ind.
Hensley, M. C., Richmond, Ind.
Mast, Foss & Co., Springfield, O.
Philadelphia Lawn Mower Co., Philadelphia, Pa.
Supple Hdw. Co., Phila., Pa.
- Lawn Rakes.**
Gibbs Mfg. Co., Canton, Ohio.
Konler, F. E. & Co., Canton, O.
- Lawn Sprinklers.**
Ette & Henger Mfg. Co., St. Louis.
Gibbs Mfg. Co., Canton, Ohio.
McGowan, John H. Co., Cincinnati, O.
Portland Lawn Sprinkler Co., Portland, Me.
- Lemon Squeezers.**
Ripley Mfg. Co., Unionville, Conn.
- Letters and Figures, Metallic.**
White, A. A. & Co., Providence, R. I.
- Letters, Paper.**
Tablet & Ticket Co., Chicago, Ill.
- Levels.**
Richardson, C. F., & Son Athol, Mass.
- Locks and Knobs, Manufacturers of.**
Leita, A. E., 97 Chambers, N. Y.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg. Co., Bridgeport, Conn.
Yale & Towne Mfg. Co., Stamford, Conn.
- Lubricants.**
Dixon, Jos., Crucible Co. Jersey City, N. J.
- Machinery.**
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Bridgeport Mch. Tool Works, Bridgeport, Conn.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Clim, Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N. Y.
Dietrich & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila., Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Howard & Morse, 45 Fulton St., N. Y.
Hubert-Rogers Mch. Co., South Sudbury, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co., Rochester, N. Y.
Manville, E. J. Mch. Co., Waterbury, Conn.
National Machinery Co., Tiffin, Ohio.
Newark Mch. Tool Works, Newark, N. J.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Wks., 188 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

- Place, Geo., 120 Broadway, N. Y.
 Poole, Robt. & Son Co., Baltimore, Md.
 Powell Planer Co., Worcester, Mass.
 Pratt & Whitney Co., Hartford, Conn.
 Prudden Tool & Supply Co., N. Y.
 Scranton Supply & Machinery Co., Scranton, Pa.
 Sellers, Wm. & Co., Phila.
 Seyfert's Sons L. F., Philadelphia, Pa.
 Steptoe, J. & Co., Cincinnati, O.
 Stow Flexible Shaft Co., Ltd., Phila.
 Toomey, Frank, Philadelphia, Pa.
 Wetherill, Robert & Co., Chester, Pa.
 Wickes Bros., Saginaw, Mich.
 Wilson, W. A., Rochester, N. Y.
- Machinery for Hardware Manufacturers.**
 Adt. Jno. & Son, New Haven, Conn.
- Machine Knives.**
 Loring Coes & Co., Worcester, Mass.
 Loyd, John, 558-562 Water St., N. Y.
- Machine Tools.—See Machinery.**
- Machine Work.**
 Papping, J., 58th St., & 11th Ave., N. Y. City.
- Machinists' Scales.**
 Coffin & Leighton, Syracuse, N. Y.
 Starrett, L. S., Athol, Mass.
- Machinists' Tools and Supplies.**
 King, J. M. & Co., Waterford, N. Y.
 Sellers, Wm. & Co., Inc., Phila.
- Mallets.**
 N. Y. Mallet & Handle Works, N. Y.
- Mangles.**
 Johnson, S. C., Racine, Wis.
- Manufacturing Sites.**
 Illinois Central R. R., Chicago, Ill.
- Measuring Tapes.**
 Keuffel & Esser Co., New York.
 Lufkin Rule Co., Saginaw, Mich.
- Mechanical Instruction.**
 Correspondence School of Mechanics
 Scranton, Pa.
- Metals.**
 Fearing, Wm. S., 100 Chambers N. Y.
 Hendricks Bros., 49 Cliff, N. Y.
- Metal Brokers.**
 American Metal Co., N. Y.
- Metallurgists.**
 Britton, J., Blodgett, Phila., Pa.
- Milling Machines.**
 Ctn. Milling Mch. Co., Cincinnati, Ohio.
- Mincing Knives.**
 Palmer Hdw. Mfg. Co., Troy, N. Y.
- Mine Lamps.**
 Darby, Edw. & Sons, Phila. Pa.
 Leonard, B. E., Scranton, Pa.
- Mining Screens.**
 Harrington & King Perforating Co., Chicago, Ill.
 Howard & Morse, 45 Fulton, N. Y.
- Models, Makers of.**
 Franklin, H. H. Mfg. Co., Syracuse, N. Y.
 Ideal Machine Works, Hartford, Conn.
 Rhodes, L. E. Co., Hartford, Conn.
- Molding Sand.**
 Obermayer, S. Co., Cincinnati, O.
- Money Drawers.**
 Sun Mfg. Co., Greenfield, O.
- Motors, Water and Electric.**
 O. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
 Dallett, Thos. H. & Co., Phila., Pa.
- Nail Bins.**
 Stacy Mfg. Co., Dayton, Ohio.
- Nail Machinery.**
 Pittsburgh Mfg. Co., Pittsburgh, Pa.
- Nail Pullers.**
 Scranton & Co., New Haven, Conn.
- Nails (Cut) and Spikes.**
 Borden & Lovell, 70 West, N. Y.
 Cumberland Nail & Iron Co., Phila.
 Oxford Iron Co., 81 Washington
 Pottstown Iron Co., Pottstown, Pa.
 Riverside Iron Wks., Wheeling, W. Va.
 Valley Steel Co., St. Louis, Mo.
- Nickel Platers' Supplies.**
 Eddy Electric Mfg. Co., Windsor, Conn.
 Hanson & Van Winkle Co., Newark, N. J.
 Zucker & Levett Chemical Company, 10 to 14 Grand St., N. Y.
- Norway Shapes, Rollers of.**
 Rowland, William & Harver, Frankford, Philadelphia
- Novelty Manufacturers.**
 Franklin, H. H. Mfg., Syracuse, N. Y.
 Ideal Machine Works, Hartford, Conn.
- Nut Machines.**
 Ounham Nut Mch. Co., Unionville, Ct.
- Nuts, Bolts, &c., Makers of.**
 American Nut Co., Lowell, Mass.
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Hassell, Wm. H. Co., Pawtucket, R. I.
 Mt. Carmel Bolt Co., Mt. Carmel, Conn.
 Pennsylvania Bolt & Nut Co., Lebanon, Pa.
 Port Chester Bolt and Nut Co., Port Chester, N. Y.
 Russell, Burdall & Ward, Port Chester
 Sternberg, J. H. & Son, Reading, Pa.
 Wilson, J. Fred., Worcester, Mass.
 Wm. H. Haskell Co., Pawtucket, B. I.
- Oil Cans and Lubricators.**
 Sherwood Mfg. Co., Buffalo, N. Y.
- Oilers.**
 Wilmot & Hobbs Mfg. Co., Bridgeport Conn.
- Oil Stones.**
 Pike Mfg. Co., Pike Station, N. H.
- Oil Stoves.**
 Glazier Stove Co., Chelsea, Mich.
- Ores.**
 Wister, Francis, Philadelphia, Pa.
- Ox-Bow Pins.**
 Sawyer, O. C., Sharon, Vt.
- Ox Shoes.**
 Scranton Forging Co., Scranton, Pa.
- Packing.**
 Morrison, Robert, St. Louis, Mo.
 N. Y. Belting & Packing Co., Ltd., N. Y.
- Padlocks.**
 Ames Sword Co., Chicopee, Mass.
 Fraim, E. T., Lancaster, Pa.
 Hillebrand & Wolf, Phila., Pa.
- Paint.**
 Gary Iron & Steel Roofing Co., Cleveland, O.
- Paint Burners.**
 Jamier Stove & Mfg. Co., Cleveland, O.
- Paint Cans.**
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Pants Stretcher.**
 Covert Mfg. Co., West Troy, N. Y.
- Patent Solicitors.**
 Butler, C. N., Phila., Pa.
 Dowson & Rowson, Phila. & Washington
 Jenner, H. W. T., Washington, D. C.
 McKinn, E. B., Washington, D. C.
- Perforated Metal.**
 Clinton Wire Cloth Co., Clinton, Mass.
 Harrington & King Perforating Co., Chicago, Ill.
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Phosphor Bronze.**
 Phosphor Bronze Smelting Co., Limited, Philadelphia.
- Phosphor Tin.**
 Crescent Phosphorized Metal Co., Philadelphia, Pa.
 Salk & Naumann, 616 Pearl, N. Y.
- Picks and Mattocks.**
 Lumo, Fayette H., Philadelphia, Pa.
- Pig Iron.**
 Houston, C. B. & Co., Philadelphia, Pa.
 Montour Iron & Steel Co., Danville, Pa.
 Maylor & Co., 45 Wall, N. Y.
 Pilling & Crane, Philadelphia, Pa.
 Samuel, Frank, Philadelphia, Pa.
- Pig Iron Storage.**
 Am. Pig Iron Storage Warrant Co., 45 Wall, N. Y.
- Pile Drivers.**
 Vulcan Iron Wks., Chicago, Ill.
- Pipe, Bent.**
 National Pipe Bending Co., New Haven
- Pipe Cutting and Threading Machines.**
 Bignall & Keeler Mfg. Co., St. Louis, Mo.
 Merrill Mfg. Co., Toledo, O.
 Pannett, Henry B. & Co., Philadelphia.
 Saunders' Sons, D., Yonkers, N. Y.
 Walworth Mfg. Co., Boston, Mass.
- Pipe Grips.**
 Prentiss Vise Co., 44 Barclay, N. Y.
- Pipes, Fittings, &c., Makers of.**
 McNab & Hanna Mfg. Co., N. Y.
- Pipe, Water and Gas, Makers of.**
 Cumberland Nail & Iron Co., Phila., Pa.
 McDonald Iron Co., Emmaus, Pa.
 Riverside Iron Works, Wheeling, W. Va.
 Wood, R. D. & Co., Philadelphia, Pa.
- Plane Irons, Manufacturers of.**
 Buck Bros., Millbury, Mass.
 Buck, Chas., Millbury, Mass.
- Planes, Manufacturers of.**
 Stanley Rule & Level Co., N. Y.
- Plated Ware.**
 Boardman, L. & Son, New Haddam, Ct.
 Holmes & Edwards Silver Co., Bridgeport, Conn.
 Rogers, Wm. Mfg. Co., Hartford, Ct.
- Plate, Iron and Steel, Mfrs. of.**
 Atlas-Standard Iron & Steel Co., Bridgeport, O.
 Lukens Iron & Steel Co., Coatesville, Pa.
 Mahoning Valley Iron Co., Youngstown, Ohio.
 Moorhead-McLean Co., Pittsburgh, Pa.
 Molvain & Sons, Reading, Pa.
 Pottstown Iron Co., Pottstown, Pa.
 Pottsville Iron & Steel Co., Pottsville, Pa.
 Singer, Nimick & Co., Pittsburgh, Pa.
 The Mahoning Valley Iron Co., Youngstown, O.
 Wellman Iron & Steel Co., Thurflow, Pa.
 Wood Alan Co., Philadelphia.
- Plating, Nickel, Brass and**
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Plow Shares.**
 Star Mfg. Co., Carpentersville, Ill.
- Pokes.**
 Bishop, A. W., Berea, Ohio.
- Polishing Machines.**
 Watson & Sauman, 204 E. 43d, N. Y.
- Post Hole Diggers.**
 Buckeye Mfg. Co., Union City, Ind.
 Gibbs Mfg. Co., Canton, Ohio.
 Graham, Jno. H. & Co., 113 Chambers St., N. Y.
 Wister, L. & R. & Co., Philadelphia, Pa.
- Poultry Nettings.**
 Baraum, E. T., Detroit, Mich.
 Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
 N. J. Wire Cloth Co., Trenton, N. J.
 "Silver Finish,"
 Tyler Wire Wks. Co., W. S., Cleveland,
 Wright & Colton Wire Cloth Co., Worcester, Mass.
- Powder.**
 Ladin & Rand Powder Co., 29 Murray
 New York Powder Co., 62 Liberty St., N. Y.
- Power Hack Saws.**
 Millers Falls Co., 23 Reade St., N. Y.
- Power Hammers.**
 Menet & Eisenhardt, Philadelphia.
 Dupont Mfg. Co., St. Johnsbury, Vt.
 Jenkins & Lingie, Bellefonte, Pa.
 Scranton & Co., New Haven, Conn.
- Presses, Dies, &c.**
 E. W. Bliss Co., Brooklyn, N. Y.
 Crosby, G. A. & Co., Chicago, Ill.
 Ferracute Mch. Co., Bridgeton, N. J.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles & Parker Press Co., Brooklyn.
 Waterbury Mch. Co., Waterbury, Conn.
- Presses, Power, Makers of.**
 Bliss, E. W. Co., Brooklyn, N. Y.
 Manville, E. J. Mch. Co., Waterbury, Ct.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.
- Pruners.**
 Toplift & Ely Co., Elyria, Ohio.
- Pulleys.**
 Keystone Clutch Mch. Wks., Phila., Pa.
 Lee, J. H. & Co., Massillon, Ohio.
 Reeves Pulley Co., Columbus, Ind.
- Pulley Fixings.**
 Foley, J. W. & Co., Cincinnati, O.
- Pumping Machinery.**
 Dean Bros. Steam Pump Works, Indianapolis, Ind.
 Hooker-Collville Steam Pump Co., St. Louis, Mo.
 Lucas, C. O. & Co., Greenville, Ohio.
 McGowan, J. H. & Co., Cincinnati, O.
 Maslin, J. & Son, Jersey City, N. J.
 Norwalk Iron Wks. Co., So. Norwalk, Conn.
 Southwick Fdy. & Mch. Co., Phila., Pa.
 Valley Pump Wks., Easthampton, Mass.
 Worthington, Henry R., 86 & 88 Liberty St., N. Y.
- Pumps, Makers of.**
 Bellevue Pump Co., Bellevue, Iowa.
 Deming Co., Salem, O.
 Douglas, W. & B., Middletown, Conn.
 Mast, Roos & Co., Springfield, O.
 Myers, F. E. & Bro., Ashland, O.
- Punches and Shears, Hand and Power.**
 E. W. Bliss Co., Brooklyn, N. Y.
 Crosby, G. A. & Co., Chicago, Ill.
 Cross & Speirs Machine Co., Waterbury, Conn.
 Ferracute Mch. Co., Bridgeton, N. J.
 Harter, A. L., Wilmington, Del.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Wals & Roos Punch & Shear Co., Cincinnati, Ohio.
 Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
 Watson & Stillman, 204 E. 43d, N. Y.
- Rails, Old and New.**
 Perry, W. H. & Co., Providence, R. I.
- Rat and Mouse Traps.**
 Eatey, W. S., 65 Fulton, N. Y.
 Ripley Mfg. Co., Unionville, Conn.
 Sun Mfg. Co., Greenfield, O.
- Razors.**
 J. H. Torrey Razor Co., Worcester, Mass.
- Reels.**
 Hendryx, A. B. Co., New Haven, Conn.
- Refrigerator Door Fasteners.**
 Conroy, F. J. & Co., Philadelphia.
- Refrigerators.**
 Challenge Corn Planter Co., Grand Haven, Mich.
 Monroe Refrigerator Co., Lockland, O.
 Pierce, Geo. N. & Co., Buffalo, N. Y.
- Rivets.**
 Blake & Johnson, Waterbury, Conn.
 Boyce Rivet Co., Muncie, Ind.
 Burden Iron Co., Troy, N. Y.
 Clark & Cowles, Plainville, Conn.
 Cobb & Drew, Plymouth, Mass.
 New England Screw Co., Boston, Mass.
 Sternberg, J. H. & Son, Reading, Pa.
 Townsend, W. P. & Co., New Brighton, Pa.
- Riveting Machines.**
 Adt. Jno. & Sons, New Haven, Conn.
- Rock Drills.**
 Sand Drill Co., 23 Park Place, N. Y.
- Rolling Mill Machinery.**
 Birmingham Iron Fy., Birmingham, Ala.
 Booth, The Lloyd Co., Youngstown, O.
 Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
 Morgan Construction Co., Worcester, Mass.
 Robinson-Rea Mfg. Co., Pittsburgh.
 Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
 Trethewey Mfg. Co., Pittsburgh, Pa.
 Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
- Roll Lathes.**
 Totten & Hogg Iron & Steel Fdry Co., Pittsburgh, Pa.
- Rolls, Chilled, Sand and Steel.**
 Booth, The Lloyd Co., Youngstown.
 Garrison, A. Fdry Co., Pittsburgh, Pa.
 Robinson-Rea Mfg. Co., Pittsburgh, Pa.
 Seaman, Sleeth & Black, Pittsburgh.
 Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
- Roofing.**
 Berlin Iron Bridge Co., E. Berlin, Conn.
 Cambridge Roofing Co., Cambridge, O.
 Cincinnati Corrugating Co., Piqua, O.
 Johns, H. W. Mfg. Co., 87 Malden Lane.
 Kanneberg Roofing Co., Canton, O.
 N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.
- Rope and Web Goods.**
 Covert Mfg. Co., West Troy, N. Y.
 Covert's Saddlery Wks., Farmer, N. Y.
- Rope Wheels.**
 Cresson, Geo. V. Co., Philadelphia, Pa.
- Rubber Goods.**
 Canfield, H. O., Bridgeport, Conn.
- Rules, Manufacturers of.**
 Keuffel & Esser Co., New York.
 Lufkin Rule Co., Saginaw, Mich.
 Stanley Rule & Level Co., 29 Chambers.
- Rust Preventive.**
 Bridgeport Gun Implement Co. 313-315 Broadway, N. Y.
- Sand Paper.**
 Baeder, Adamson & Co., Phila., Pa.
- Sash Balances.**
 Caldwell Mfg. Co., Rochester, N. Y.
 Fullman Sash Balance Co., Rochester, N. Y.
 Stearns, E. C. & Co., Syracuse, N. Y.
- Sash Cords and Chains.**
 Morton, Thos., 65 Elizabeth, N. Y.
 Ossawan Mills Co., Norwich, Conn.
 Samson Cordage Works, Boston, Mass.
 Smith & Egge, Mfg. Co., Bridgeport.
- Sash Locks.**
 Columbian Sash & Door Lock Co., Wauseon, Ohio.
 Ives, H. B. & Co., New Haven, Conn.
- Sash Pulleys.**
 Palmer Hardware Mfg. Co., Troy, N. Y.
- Sash Weights.**
 Brown, E. & Co., Philadelphia, Pa.
 Norton Bros., Chicago, Ill.
- Saw Filing Machines.**
 Diston, Henry & Sons, Philadelphia, Pa.
- Saws, Makers of.**
 Butler Mfg. Co., Boston, Mass.
 Diston, Henry & Sons, Phila., Pa.
 National Saw Co., 98 Reade St., N. Y.
 Simonds Mfg. Co., Fitchburg, Mass.
- Saw Vises.**
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Saw Sets.**
 Taintor Mfg. Co., 84-86 Chambers, N. Y.
- Scales, Manufacturers of.**
 Buffalo Scale Co., Buffalo, N. Y.
 Chaffillon, John & Sons, 85-89 Cliff, N. Y.
- Scrapers, Road.**
 Am. Steel Scraper Co., Sidney, Ohio.
 Kilbourne & Jacobs Mfg. Co., Columbus, O.
 Sidney Steel Scraper Co., Sidney, O.
- Screens, Coal and Ore.**
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Screens, Door and Window.**
 Phillips, A. J. & Co., Fenton, Mich.
 White, Van Gahn & Co., 15-17 Chatham Sq., N. Y.
- Screw Cutting Machinery.**
 Wells Bros. & Co., Greenfield, Mass.
 Wiley & Russell Mfg. Co., Greenfield, Mass.
- Screw Drivers.**
 Brown, R. H. & Co., New Haven, Conn.
 Mayhew, A. H. Co., Shelburne Falls, Mass.
- Screw Plate and Pipe Cutter.**
 Jarecki Mfg. Co., Erie, Pa.
- Screws, Makers of.**
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Wm. H. Haskell Co., Pawtucket.
 Miles, F. S., 205 Quarry, Philadelphia.
 New England Screw Co., Boston, Mass.
 Reynolds & Co., New Haven, Conn.
 Worcester Machine Screw Co., Worcester, Mass.
- Scroll Saws.**
 Barnes, W. F. & John, Rockford, Ill.
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Scythe Stents and Whetstones.**
 Pike Mfg. Co., Pike Station, N. H.
 Cleveland Stone Co., Cleveland, O.
- Shafting, Makers of.**
 Cresson, Geo. V. Co., Philadelphia, Pa.
 Fairmount Mch. Co., Philadelphia, Pa.
 Fitzsimons & Co., Cleveland, Ohio.
 Sellers, Wm. & Co., Inc., Phila., Pa.
 Stow, Co. Mfg., Binghamton, N. Y.
- Shaped Iron and Steel, Manufacturers of.**
 Etna-Standard Iron & Steel Co., Bridgeport, O.

See Alphabetical Index, Pages 105 & 106.

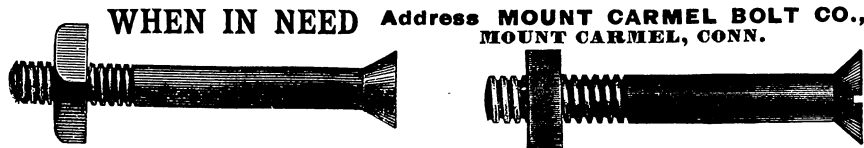
- Allentown Rolling Mill.** Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville, Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phoenix Iron Co., Phila., Pa.
- Shears and Scissors.**
James Shear Co., Bridgeport, Conn.
Seinische, R. Sons Co., Newark, N. J.
- Sheet Iron and Steel, Manufacturers of.**
Atna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chessa Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh, Pa.
Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ltd., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.
- Sheet Zinc.**
Mathiessen & Hegeler Zinc Co., La Salle, Ill.
- Shelf Brackets.**
Koeh, A. B. & Co., Peoria, Ill.
- Sinks.**
Douglas, W. & B., Middletown, Conn.
- Skates, Ice.**
Levell, Jno. P. Arms Co., Boston, Mass.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.
- Skates, Roller.**
Jenley, M. C., Richmond, Ind.
Union Hardware Co., Torrington, Conn.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.
- Smelting Works.**
Leeves, Paul S., 760 S. Broad, Phila.
- Soldering Coppers.**
Clendenin Bros., Baltimore, Md.
Cover Mfg Co., West Troy, N. Y.
- Speaking Tubes.**
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.
- Specialties, Pat. Articles.**
Rhodes, L. E. Co., Hartford, Conn.
- Spelter.**
Mathiessen & Hegeler Zinc Co., La Salle, Ill.
Missouri Metal Co., St. Louis, Mo.
- Spoons and Forks.**
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
- Sporting Goods.**
Hartley & Graham, 313-315 E'way, N.Y.
- Spring Hinges.**
Clark & Cowles, Plainville, Ct.
Junard Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolfe, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
- Stamping Ware.**
Am. Stamping Co., 104 & 106 John St., New York
- Stamping Works.**
Cleveland Stamping & Tool Co., Cleveland, O.
- Staples.**
Jobb & Drew, Plymouth, Mass.
Kitchener E. H. & Co., Binghamton N.Y.
- Steam Gauges.**
Trist Co., Waterbury, Conn.
- Steam Hammers, &c., Makers of.**
Jenett & Eisenhardt, Philadelphia.
Udgon, Richard, 24 Columbia Street, N. Y.
Tretchew Mfg. Co., Pittsburgh, Pa.
- Steam Heating.**
Webster Warren & Co., Camden, N.J.
- Steam Separators.**
Soubert Mfg. Co., 32 Cortland St. N. Y.
Tarrison Safety Boiler Wks., Phila. Pa.
- Steel, Cold Rolled Strip.**
Superior Steel Co., Pittsburgh, Pa.
Wilmot & Mobbs Mfg. Co., Bridgeport, Conn.
- Steel Figures and Alphabets.**
Hoefg, C. W., 52 Fulton St., N. Y.
Hogson & Pettis Mfg. Co., New Haven, Conn.
Krossrud, W., 61 Fulton, N. Y.
Wolfe, C. H., 177 William St., N. Y.
- Steel Importers.**
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, Eng. land, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y.
Widney, A. R. & Co., E'way, N. Y.
Wolfe, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Steel (Mushet's Special).**
Jones, B. M. & Co., Boston.
- Steel Manufacturers.**
Atna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa.
Baker, Herman & Co., 103 Duane St. Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Gautier Steel Department or Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, Eng. land, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorehead-McCleane Co., Pittsburgh, Pa.
Moss, F. W., 83 John N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh, Pa.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Superior Steel Co., Pittsburgh, Pa.
Valley Steel Co., St. Louis, Mo.
Wordlaw S. & C., Sheffield, Eng.
Wetherell Bros., 93 Liberty N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel, Manufacturers' Agents.**
Barnes, C. K. & Co., Philadelphia, Pa.
Corning, Edw. & Co., 29 E'way, N. Y.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.
- Steel Rails, Manufacturers of.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville, Pa.
Riverside Iron Wks., Wheeling, W. Va.
- Steel, Tool.**
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, Eng. land, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
- Step Ladders.**
Bicycle Step Ladder Co., Chicago, Ill.
Croissant, M., Albany, N. Y.
- Stocks and Dies.**
Armstrong Mfg. Co., Bridgeport, Conn.
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Stove Linings.**
Ostrander Fire Brick Co., Troy, N. Y.
- Stove Pipe Thimbles.**
Cheney, S. & Son Manlius, N. Y.
- Stove Trucks.**
Gwinner Mfg. Co., Hamilton, O.
- Street Lamps.**
Steam Gauge & Lantern Co., Syracuse N. Y.
- Strops.**
J. R. Torrey & Co., Worcester, Mass.
- Structural Iron Work.**
Berlin Iron Bridge Co., East Berlin, Conn.
Lindsay, Jas. G. & Co., Phila., Pa.
- Sulphuric Acid.**
Mathiessen & Hegeler Zinc Co., La Salle, Ill.
- Tacks, Brads, Staples, &c.**
Atlas Tack Corporation, Boston, Mass.
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
- Taps and Dies.**
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Testing Laboratories.**
Riehle Bros. Testing Mch. Co., Philadelphia.
- Testing Machines.**
Riehle Bros. Testing Mch. Co., Phila.
- Theatrical Hardware.**
Wollensak, J. F., Chicago, Ill.
- Thill Springs.**
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.
- Timber and Mineral Lands.**
Robertson, E. Co., Cincinnati, O.
- Time Record.**
Scattergood, H. W., Phila., Pa.
- Tin Plate Machinery.**
Lloyd Booth Co., Youngstown, Ohio.
- Tinware.**
Am. Stamping Co., 104 & 106 John St.,
- Tire Upsetters.**
Butts & Ordway, Boston, Mass.
- Toe Calks, Steel.**
Burke, P. F., Boston, Mass.
- Tool Blocks.**
Hulbut-Rogers Mch. Co., South Sudbury, Mass.
- Tool Chests.**
Am. Tool Co., 200 W. Houston St., N.Y.
- Tool Holders.**
Armstrong Bros. Tool Co., Chicago, Ill.
- Tools.**
Britton, Horace E., Stoughton, Mass.
Brown, R. H. & Co., New Haven, Conn.
Case, Co., 19 Warren St., New York.
Hurley Bros., Hartford, Conn.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 98 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, New York, N. Y.
Starrett, L. S., Athol, Mass.
Tower & Lyon, 95 Chambers St., N. Y.
Wilkinson, A. J. & Co., Boston, Mass.
- Tools, Blacksmith and Wheelwrights.**
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway, Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R., Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Tools, Steam and Gas Fitters.**
Saunders' Sons, D., Yonkers, N. Y.
- Torches, Oil and Gasoline.**
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
Standard Lighting Co., Cleveland, O.
- Transom Lifters.**
Wollensak, J. F., Chicago, Ill.
- Tricycles.**
Toledo Metal Wheel Co., Toledo, Ohio.
- Trucks, Manufacturers of.**
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co., Lansing, Mich.
- Tubes, Seamless Drawn Copper.**
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.
- Tubes, Steel.**
Ellwood Shattling & Tube Co., Ellwood City, Pa.
Lang, John S. Son & Co., 4 Fletcher St., N. Y.
Shelby Steel Tube Co., Shelby, O.
U. S. Projectile Co., Brooklyn, N. Y.
- Turning Barrels.**
Henderson Bros., Waterbury, Conn.
- Turnbuckles.**
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.
- Twist Drills, Makers of.**
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.
- Valves, Gas, Water and Steam.**
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
Lunkensheimer Co., Cincinnati, O.
McNab & Harlin Mfg. Co., 66 John, N. Y.
- Ventilating Fans.**
Huvett & Smith Mfg. Co., Detroit, Mich.
- Ventilator Appliances.**
Howard & Morse, 45 Fulton, N. Y.
- Vise Jaws.**
Newark Mch. Tool Co., Newark, N. J.
- Vises.**
Athol Machine Co., Athol, Mass.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y. Y.
Tower & Lyon, 95 Chambers St., N. Y.
Van Wagoner & Williams Co., Warren St., N. Y.
- Wagon Jacks.**
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.
- Wash Boards.**
Olds Wagon Wks., Ft. Wayne, Ind.
- Washers.**
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.
- Washing Machines.**
Diether & Barrows, Ft. Wayne, Ind.
Benbow Mfg. Co., St. Louis, Mo.
Richmond Cedar Works, Richmond, Va.
- Water Meters.**
Worthington, Henry R., 86 & 88 Liberty St., N. Y.
- Water Wheels.**
Poole, Robt. & Son Co., Baltimore, Md.
- Well Buckets.**
Richmond Cedar Works, Richmond, Va.
- Wheelbarrows.**
Amer. Steel Scraper Co., Sidney, Ohio.
Byran Mfg. Co., Byran, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, Ohio.
Sweatt Mfg. Co., Minneapolis, Minn.
Toledo Wheelbarrow Works, Toledo, Ohio.
Withington & Cooley Mfg. Co., Jackson, Mich.
- Window Cord, Makers of.**
Samson Cordage Works, Boston, Mass.
- Wire, Manufacturers of.**
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester.
Wetherell Bros., 93 Liberty St., F. Y.
Wolfe, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Wire Cloth.**
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff, N. Y.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.
- Wire Cutters.**
Higginum Edw. Co., Higginum, Conn.
King, J. M. & Co., Watertown, N. Y.
- Wire Dies.**
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.
- Wire Fences, See Fencing, Iron and Wire.**
- Wire Goods, Manufacturers of.**
Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawa Mills Co., Northfield, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Williamson, C. T. Wire Novelty Co., Newark, N. J.
- Wire Machinery.**
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester, Mass.
Waterbury Mch. Co., Waterbury, Conn.
- Wire Straightening and Cutting Machinery.**
Adt. John & Son, New Haven, Conn.
- Wire Nails.**
Bond Nail Co., Raynham, Mass.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
Phillips, Townsend & Co., Phila., Pa.
Salem Wire Nail Co., Salem, O.
Taunton Wire Nail Co., Taunton, Mass.
Whitney, A. R. & Co., New York.
- Wire Rods, Steel.**
New Castle Wire Nail Co., New Castle, Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 E'way, N. Y.
Wolfe, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Wire Rope, Iron and Steel, Makers.**
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco.
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.
Williamsport Wire Rope Co., Williamsport, Pa.
- Wood-Working Machinery.**
Fay, J. A. & Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Wilkinson, A. J. & Co., Boston, Mass.
- Wrenches, Manufacturers of.**
Bemis & Call Hardware & Tool Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn.
Coes Wrench Co., Worcester, Mass.
Tower & Lyon, 95 Chambers St., N. Y.
Trimon Mfg. Co., Roxbury, Mass.
Walworth Mfg. Co., Boston, Mass.
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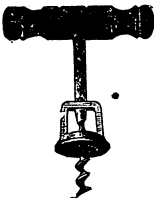
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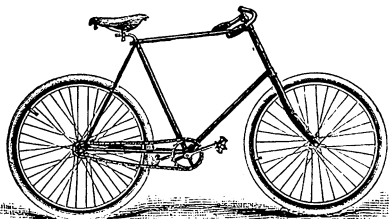
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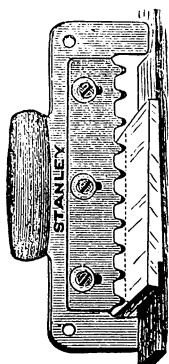
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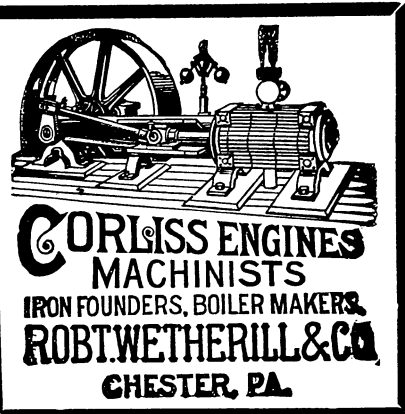
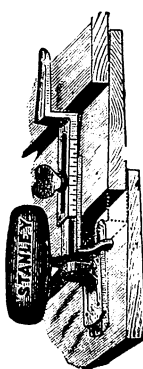
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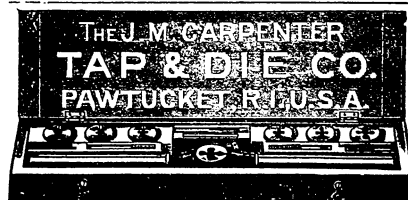
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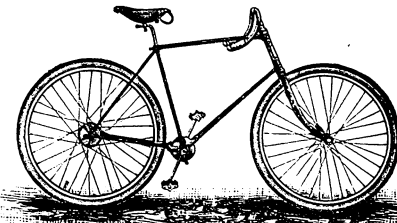


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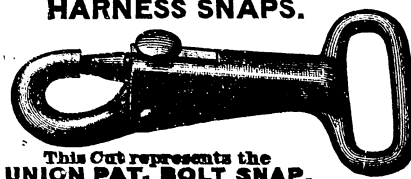
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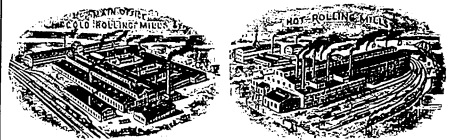
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Annual Capacity 15,000 tons. Annual Capacity 30,000 tons.

BESSEMER, OPEN HEARTH,
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"SWEDOH"
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Sheet, Band and Strip Steel

HOT ROLLED in lots of a few tons or more of a size, and in widths varying from one inch to eight inches or thereabouts by about 1-16 inch and in thickness No. 21 Stubb's Gauge (about 1-32 inch) and thicker for the narrower widths and proportionally thin for the wider sizes, and with plain blue, annealed or pickled finishes.

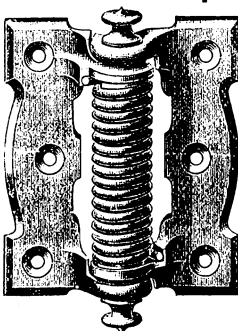
COLD ROLLED Especially to order in lots of a ton or more of a size, with stock widths up to 15 inches (other widths furnished at our option with round edges or one or two sheared edges; unless ordered differently), and in thickness No. 33 Stubb's Gauge (less than 1-100 inch) and thicker, depending upon the width, up to about No. 6 Stubb's Gauge (about 2-10 inch) and with any quality of surface or degree of stiffness or ductility, as follows:

Tabulated Code of Initials used in describing degree of Smoothness of Surface and Ductility of Cold Rolled Steel.

	"EXTRA SOFT" BRIGHT STEEL.	"SOFT" DRAWING STEEL.	"ALF HARD" BRIGHT BENDING STEEL.	"HARD" BRIGHT BENDING STEEL.	"EXTRA HARD" BRIGHT STEEL.
For more complete description of any one of these qualities of finish send for our new Steel Department Pamphlet.					
"Fairly Smooth" Surface.	A. F.	B. F.	C. F.	D. F.	NONE MADE.
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"Best Smooth" Surface.	A. B.	B. B.	C. B.	D. B.	E. B.

Used for all Pressed, Stamped and Drawn Work. Easily Brass, Copper, Bronze or Nickel Plated, Tinned or Japanned.

Columbia Spring Hinges



FOR
Screen
Doors.

Cast Iron,
Japanned.

These Hinges are very simple in construction. They are packed flat, with the tension of the Springs adjusted, and are "ready for business" as soon as attached to the door.

Having no small or loose parts, they cannot get out of order. They are reversible and can be used on either Right or Left Hand Doors.

No. 14, 3 x 2 1/4, Japanned.
1 Dozen pairs in a box. 1/2 Gross pairs in a case.
THE CHEAPEST AND BEST SPRINGS IN THE MARKET. SEND FOR PRICES.

MANUFACTURED BY
VAN WAGONER & WILLIAMS CO.,
Cleveland, Ohio, and 14 Warren Street, New York.

THE IRON AGE

THURSDAY, MARCH 15, 1894.

Blowing Engines.

In discussing a paper by Julian Kennedy on blowing engines, read before the American Institute of Mining Engineers, David Baker of Sparrow's Point, Md., made the following remarks:

The question of the best type of blowing engine is of vital importance to the blast furnace manager and should be thoroughly discussed. There is room also for discussion on another point—namely, the steam valve setting best suited for either or all types. By more careful attention to this point many costly breakdowns might be avoided. In many engine rooms the indicator is unused, and if the engineer keeps the air valves in fairly good condition he thinks that, together with the general care of the engine, is sufficient. This is true mostly at small furnace plants.

$\frac{1}{8}$ -inch lead. This was sufficient to make the compression in the cylinders very high, so that the work of compressing the air was doubled at the end of the stroke by the compression in the steam cylinder.

After a while this doubled load at each end of the stroke began to tell on the engine. The first trouble was a broken crank, and then beam cap bolts began to break. At the same time we noticed that the bed plate under the main shaft bearings was lifting. We broke main cap bolts, and finally a foundation bolt in the bed plate near the main shaft bearing. After repairing, and before starting the engine again, the steam valves were set to give some lap. The change in valve settings showed its effect at once. We had no further trouble with the caps or with the lifting of the bed plate. A similar change in the No. 2 engine produced the same result and prevented any

desired. We used disks $\frac{3}{8}$ inch in thickness and pressed to such a density as to be easily drilled with an ordinary power twist drill. The first of these disks has been in use over a year and shows about $\frac{1}{8}$ inch wear; the leather ones lasted two weeks.

The Almond Right Angle Shaft Coupling.

The angular coupling manufactured during the past ten years by T. R. Almond of 85 Washington street, Brooklyn, N. Y., is well known in the form shown in Fig. 3. It possesses the advantages of having a positive motion, being noiseless in its action, consuming less power than gears or a quarter turn belt and of taking care of itself, as regards lubrication, for several weeks. Concerning the durability of this coup-

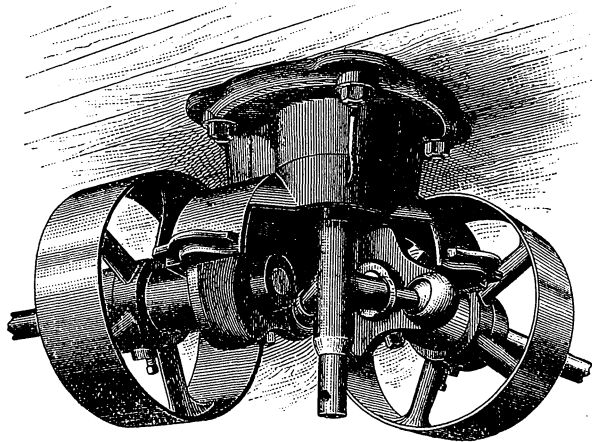


Fig. 1.—New Form of Coupling.

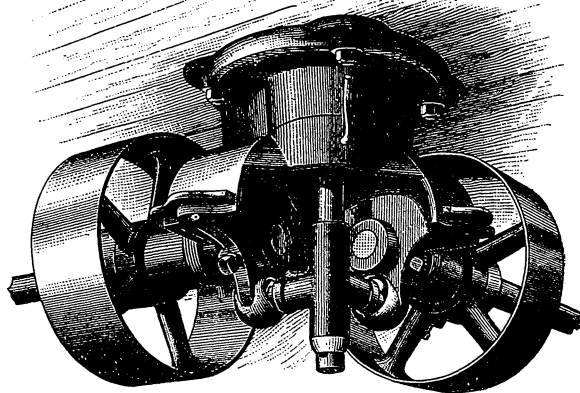


Fig. 2.—Parts a Quarter Turn from Position Shown in Fig. 1

THE ALMOND RIGHT ANGLE SHAFT COUPLING.

The experience of the Maryland Steel Company in this matter may be interesting and helpful. The blowing engines used at this plant are of the double vertical condensing type, the cylinders being 44 x 60 x 84 inches and fitted with piston steam and exhaust valves. The steam valves are controlled by the Allen link adjustable cut off. The air valves are of the regular poppet type, 7 inches in diameter, and were originally provided with leather faces. These engines were built by the Southwark Foundry & Machine Company of Philadelphia, from designs furnished by the Maryland Steel Company. In their construction no metal was spared to make a very rigid vertical engine, a result which has been realized in their working.

The Bessemer blowing engines in the same house are from the same patterns as the furnace engines, differing only in the size of the cylinders, tie rods, piston rods and foundation bolts, the cylinders measuring 54 inches instead of 44 inches. The exhaust valves in these engines were set to close when the piston was 10 inches from the end of the stroke, and could be set at no nearer point. When the engines were erected the steam valves were set with

damage to bed plate or foundation bolts.

The amount of lap which we have settled upon as giving the best results is $\frac{1}{8}$ inch. When running the engine condensing, this gives practically no compression above atmospheric pressure and at the same time gives an economical card, considering the increased life of the engine. On the furnace engines we have given the steam valves about $\frac{1}{2}$ inch lap, as the exhaust valves in these engines close when the piston is 3 inches from the end of the stroke. The furnace engines run more smoothly and there is not so much trouble in keeping the engine from knocking.

Mr. Kennedy speaks of the vexation due to the use of leather, gum and such short lived materials for valves. We experienced that, especially with the discharge valves of the Bessemer blowing engines. After trying a number of different compounds for the faces of the discharge valves, we decided upon disks made of vulcabeston as giving the best results. This material, which is manufactured by the H. W. Johns Mfg. Company, New York City, is made of asbestos and rubber, vulcanized and pressed into molds to the shape and thickness

ling Mr. Almond has, at his works, one that was run ten hours a day for three years, and it now shows no signs of wear, nor can any lost motion be perceived.

Tests made by Professor's Denton and Jacobus of Stevens Institute upon the request of Franklin Institute when the John Scott medal was awarded to Mr. Almond, showed that in the transmission of about 6 horse-power at a speed of 300 revolutions the loss was only 11.2 per cent.

Briefly described, the coupling is a compact arrangement of two short shafts set within bearings at right angles to each other. The inner ends of these shafts are connected together through the medium of two cranks with flexible joints and a sliding bracket having arms engaging with the cranks, whereby the rotary motion of the driving shaft is first converted into a crank motion, which, through the slide pieces, is transmitted to the other crank on the driven shaft, which causes the latter to rotate at right angles to the power applied. The bracket slides on a standard placed vertical to the plane of the driving and driven shafts and at the intersection of the axes of the shafts. It is evident that the shafts can be

placed at any desired angle with each other which will admit the device, and that they can be placed in line with each other. The driven shaft revolves in a direction contrary to that of the driving shaft.

The whole device is compactly mounted in an inclosed frame, portable as a complete coupling, ready for service when bolted to the ceiling. All of the working parts and bearings are inclosed in an iron case which serves the double purpose of keeping the parts clean and free from dust, as well as furnishing a large oil receptacle which, by its peculiar construction, provides a most effectual means of keeping the wearing parts well lubricated.

The coupling now being introduced by Mr. Almond in the smaller sizes is shown in Figs. 1 and 2, which show the position of the parts a quarter turn from each other. In this construction the jointed cranks have been replaced by the crank disk shown in Fig. 4, and the mechanism thereby greatly simplified. One of these cranks is bolted to each end of the shaft, as indicated. In one end the crank is a ball joint, the

necessary to experiment somewhat in order to obtain the proper temperature at which to pour, but this has now been entirely overcome. The seat thus formed is perfect in every respect, and after the joint has been cleaned it is impossible to detect with the fingers any inequality, and there is no position at which the ball binds in its seat even to the slightest degree.

Statistics of the Production of Basic Steel in 1893.

The total make of steel and ingot iron from phosphoric pig iron during the year 1893 amounted to 3,638,556 tons, being an increase over the make for the previous twelve months of 435,916 tons. Of this total the make of basic Bessemer steel amounted to 2,808,241 tons, and that of basic open hearth steel was 830,315 tons. Of the steel containing under 0.17 per cent. of carbon, the basic Bessemer produced 2,304,881 tons, and the basic open hearth 596,716 tons. There were 874,-

with the view of securing the best material for these weapons; an alloy of 5 per cent. of nickel and 95 per cent. of steel being, it is said, the best yet discovered. Three nickel steel and three plain steel barrels have been already made, and are about to be thoroughly tested at Indian Head.

Advices from Youngstown, Ohio, are to the effect that the puddlers employed in the Mahoning Valley Mills have refused to accept the \$4 puddling rate requested by the mill owners in that place. At this time it is not known whether concerted action will be taken by the firms there who made the request for a \$4 puddling rate, but it is intimated that one or two concerns will endeavor to start up their puddling departments with non union men, paying the \$4 rate, the same as is in force in Pittsburgh.

P. J. Mundie Lodge is the title of the first organization of rod mill hands under the National Union of Iron and Steel Workers and which is composed

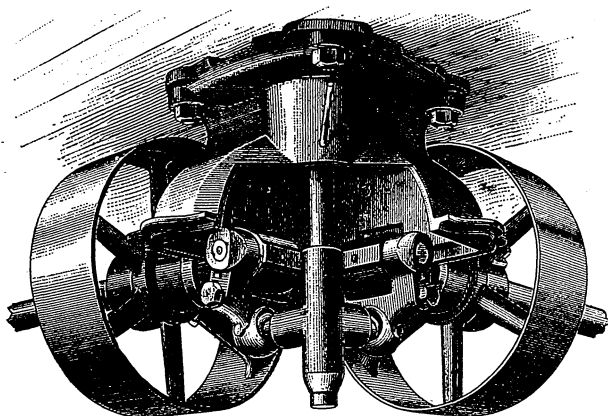


Fig. 3.—Original Form of Coupling.

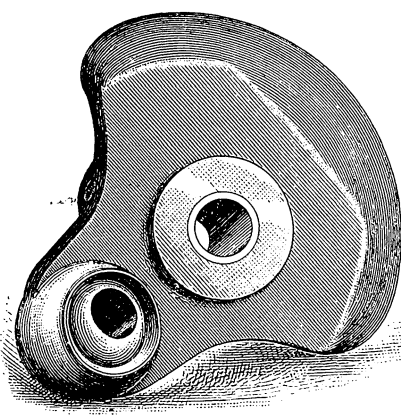


Fig. 4.—Crank Disk with Ball in Casting.

THE ALMOND RIGHT ANGLE SHAFT COUPLING.

ball of which is bored out to receive one of the arms of the bracket which moves up and down upon the standard placed at the intersection of the shafts. As the arms of the bracket are free to move in the bearings formed in the balls, and as the latter are free to move in their own seats, the device accommodates itself perfectly to all positions. That portion of the cranks opposite the balls is enlarged in order to counterbalance the weight of the bracket.

A Novel Feat in Casting.—Heretofore the seats for the balls have been made in two parts bolted together. But Mr. Almond conceived the idea of first finishing the ball and then casting the crank upon it. Although much difficulty was at first experienced in getting foundries to even try the experiment, there is now no trouble in obtaining perfect work. Brown & Sharpe are now casting the cranks so successfully that the rejections do not amount to over two in the hundred. The ball is first rough bored, then its surface covered with four or five coats of japan laid on very evenly. It is then placed in position in the mold. The hot metal burns the japan, and a thin layer of gas is formed between the ball and metal, which prevents any union from taking place. Upon cooling, the layer of ash from the japan is worked out by moving the ball. As first it was

900 tons of basic slag produced with the steel, containing about 36 per cent. of phosphate of lime, nearly the whole of which was used as a fertilizer. The makes of the various countries for the years ending December 31, 1893 and 1892, respectively, are appended:

of 60 members in the employ of the American Wire Company, at Cleveland, Ohio.

Prison statistics of the State of New York show that convicts from the State

Table Showing the Production of Basic Steel in 1893 and 1892.

	1893.		1892.	
	Total.	With under 0.17 per cent carbon.	Total.	With under 0.17 per cent carbon.
England.....	Tons. 358,036	Tons. 293,445	Tons. 406,839	Tons. 317,583
Germany and Luxembourg	2,344,754	1,971,441	2,013,484	1,616,783
Austria and Hungary.....	314,992	229,567	288,122	212,408
France	363,017	243,263	287,528	196,190
Belgium, Russia and the United States...	257,757	163,491	206,667	129,028
Totals	3,638,556	2,961,977	3,202,640	2,471,992

It will be observed that Germany and Luxembourg are still far ahead of all other countries as producers of basic steel.

The Ordnance Bureau of the Navy will shortly issue a call to the small arms manufacturers of the United States to begin the supply of the new rifles. Experiments are being made

prison at Dannemora constructed during the last six months of 1893 3400 feet of macadamized road and 5950 feet of cobblestone gutter, set 5000 feet of curbstone and made 4000 feet of earth sidewalk. The problem of the profitable employment of convict labor, without putting it into competition with free industries, seems to find here a good solution.

The Foundrymen's Association.

The regular monthly meeting of the Foundrymen's Association was held at the Manufacturers' Club, in Philadelphia, on Wednesday, 7th inst., with a large attendance of members. The president, Francis Schumann of the Tacony Iron & Metal Company, Philadelphia, occupied the chair.

The minutes of the last meeting having been read, Mr. Kelly called attention to the remarks therein recorded as made by T. B. Harkins of Bristol, on the subject of molding machines. He said that as the minutes stood the impression was conveyed that the chairs, or the molding machines on which they were made, were failures from a mechanical standpoint. Such, he said, was not the case. The idea intended to be conveyed by Mr. Harkins was that the chairs were failures in a marketable sense owing to royalty arrangements in connection with their manufacture. The chairs, as turned out by the machines, were quite satisfactory. On motion, the minutes were amended and approved.

The Condition of Business.

Secretary Evans, for the Executive Committee, reported that there had been no improvement in the foundry business since the last meeting of the association; in fact, if anything, the business was in a worse condition. Two or three concerns in this section were busy on contracts which they had taken at low figures, but jobbing and machine shops, malleable iron and stove works were exceedingly quiet. Business with them was at a low ebb, lower, probably, than ever before. There was also a great falling off in prices.

The treasurer, Josiah Thompson, reported a balance of \$302.13 on hand and all bills paid.

Soil Pipe.—Reports from special committees being next in order, R. A. Register of Register & Sons, Baltimore, for the cast iron soil pipe section of the Price Committee, said that he had little to report. His works were running at their full capacity and it would hardly pay to run at less. The greater the quantity of iron they could melt the cheaper they could work and the harder they had to hustle to sell the products. Regarding discriminations in freight rates against pig iron from the South, he had already in his possession a bill of lading from a consignee in Boston showing a rate of \$3.85 on iron pipe from the South against \$4.26 on pig iron. He expected to get others from Philadelphia and New York before long and would report further.

Cast Structural Work.—Geo. P. Smyser of E. G. Smyser's Sons of York, Pa., for the structural iron work section of the committee, reported that there had been no meeting of his section since it last reported. Prices, he said, were enough to take one's breath away. Columns, faced off and lugs on, at \$1.35 were the latest example. He had about made up his mind that it was time to sit down and found it better to take as little out of the cupola as possible.

Sash Weights.—E. E. Brown of E. E. Brown & Co., representing the sash weight section of the committee, reported that business in his section was not as good as it was a month ago. There were some large stocks on hand. One manufacturer having a large stock had made up his mind to get rid of it,

and that meant a sacrifice of the profits.

Car Wheels.—Asa Whitney of A. Whitney & Sons, representing the car wheel section of the Price Committee, reported business nothing worse than it had been; 96 cents per 100 pounds was the worst price he had heard asked on car wheels.

Cast Pipe.—P. D. Wanner of the Reading Iron Foundry Company, for the cast iron water and gas pipe section of the committee, said that he had nothing to add to his last report. He would, however, mention one thing which he thought would interest all present. They would remember that in Pennsylvania there had been passed a law prohibiting the running of company stores. He was given to understand that in the South such stores were running right alongside the pipe foundries; not only stores but whisky shops; and the working people employed could go in and out of them straight along and spend money just as they earned it, and faster. There was, he believed, more money being made out of the whisky business than out of the foundries. It occurred to him that it might be well to make application to the Pennsylvania Legislature for a repeal of the law. He failed to see how successful competition could be carried on against Southern pipe makers if such methods were adopted on one side. It looked as though protection against the South would be needed.

Foundry Chemistry.

Under the head of new business, Secretary Evans called for a discussion on "Foundry Chemistry." Mr. Wheeler had made an address before the Western Foundrymen's Association in regard to chemistry, which had been replied to by W. J. Keep of the Michigan Stove Company. The theories of these gentlemen were conflicting. A discussion on the subject had been going on by means of correspondence published in the newspapers, and he had a number of letters before him bearing on the subject. Mr. Keep, he said, had made an assertion rather opposed to the practice of chemistry in the ordinary foundry. The chemists were, of course, anxious to present their side of the question, with the result that an interesting discussion had been started. Mr. Keep's paper, read before this association at the last meeting, appeared in the account of the proceedings of such meeting in *The Iron Age* of the 15th ult., and was replied to in a subsequent issue of the same journal by Wm. Molin, a chemist, of New York, who declared Mr. Keep's ideas were wrong.

A communication was then read from J. Blodgett Britton of the Iron Masters' Laboratory of Warrenton, Va., in answer to a letter from Secretary Evans inviting him to be present at this meeting, to take part in the discussions on Mr. Keep's paper. Mr. Britton's letter was as follows:

"Circumstances will not allow me now to leave the laboratory, and if present I should be disinclined to criticize or discuss the paper in question, further than to say that to my view it is illogical in conclusion, fallacious on its face, and in tendency retrogressive rather than progressive; and in effect, if its intended teachings be followed, will do more harm than good to the foundry interests. With the thinking and advanced metallurgists my belief is that it will tend to materially shake confidence in all of its author's past physical tests. If we have

learned anything through chemical metallurgical science it is that primarily the value of cast and wrought iron and steel for special industrial purposes depends upon the composition of the metal and the relative proportions of the composing elements; and now to ignore this truth is, to say the least, unwise. There is no such thing as a single standard foundry iron that will answer best for each of the many purposes for which the metal is used. Different purposes require metal of more or less different properties—in many cases, widely different. In order to select one to meet the full requirements for a given purpose the foundryman must first know what should be the composition of such an iron; and, second, he should know the composition of the one or several he is purchasing to meet the purpose. And there is no possible way for him to know in either case without resort to accurate quantitative chemical analysis. Physical tests and appearance of fracture are not to be disregarded, but they should be taken in connection with chemical analysis, and not till these facts are recognized and acted upon can the foundryman hope to rise above present methods and capabilities and meet the coming demands of advancing industries. It may be doubted if there is a single well established iron works in this or any country that, having resorted to full, accurate and systematic chemical analysis in controlling its work and able to afford continuance, would discontinue it because of want of utility."

W. C. Henderson, chemist for Thos. Davlin & Co., then read the following letter from John E. Fry of Pittsburgh, Pa.:

"Referring to the proceedings of your meeting of the 7th ult., as published in *The Iron Age* of the 15th ult., a paper presented by W. J. Keep, Detroit, Mich., presents under the head of 'Keep's Foundry Chemistry' many statements which should not pass unchallenged if desired knowledge is to be had which has foundation in fact only. Assuming that Mr. Keep has reference to pig irons as they come from the blast furnace, and not to mixtures of such, his presentation of the effect of the principal metalloids indicates that he recognizes properties not generally known to metallurgists.

"Referring to his remarks on phosphorus, the undersigned has not been able to determine, after many physical tests, whether an iron contained as much as 2.00 per cent., or as little as 0.02 per cent. of that metalloid, notwithstanding Mr. Keep attributes to it a brittle making characteristic.

"Sulphur to an amount considerably in excess of 0.10 per cent is found in very good pig iron, notwithstanding Mr. Keep's decisive statement to the contrary.

"True, as Mr. Keep says, carbon 'will vary in total amount,' and his chemist will inform him that it varies practically inversely as the content of silicon. Thus a high silicon iron is relatively low in total carbon. The proportions of what are called 'combined' and 'free' carbon refer to the total carbon content directly as the rate of cooling from its melted temperature down to solidification to blackness, or, in other words, the quicker iron is solidified the less will be the proportion of 'free' carbon, and if cast iron were cooled instantaneously all the carbon would be found in the so called 'combined' state, while the same iron cooled sufficiently slow would contain practically no combined carbon. Hence all its carbon is

in the so called 'combined' state when the iron is liquid.

"The disposition of 'combined' carbon to separate out as free carbon, even when the iron is not fluid, may be illustrated by heating a pig of perfectly 'white' iron to redness and holding it thus for 48 hours or more, when, according to the length of time, the pig will be found 'mottled' or entirely 'gray.' From this it is evident that the 'grayness' of cast iron, relative to its content of other metalloids, depends largely on the mass of the casting. This is again evidenced by the every day fact that an iron which would be white in a $\frac{1}{8}$ inch plate would be gray in a 1-foot cube. Blast furnacemen may contract to fill any reasonable specification for content of any general element common to pig iron except carbon, for that is so far an accident of manufacture that when metalloids such as silicon are specified the content of carbon must be relative thereto, as hereinbefore stated, being entirely beyond control except in that relation. Neither must we entirely agree with Mr. Keep when he says: 'All other things in cast iron can be overlooked except silicon.'

"In so far as he refers to merchantable pig iron he is right, but when a 'mixture,' particularly one containing that doubtful component 'scrap,' is made, the silicon must not be held responsible for any deficiency in the physical qualities of the casting independently of the other metalloids, for, in the absence of intelligent compounding it generally happens that the 'mixture' may be 'fearfully and wonderfully made' with reference to the use designed.

"Mr. Keep is with us in saying that '2 per cent. will do more (softening) by using one brand than will 2 50 per cent. from another brand,' by thus acknowledging the potency in physical effects of other metalloids of differing content in the two brands referred to. Mr. Keep also says: 'The mechanical structure resulting from certain combinations of pig iron will give remarkable results without reference to chemical constitution.' Of this there can be no doubt, but scarcely in the sense he intends, for the less the reference one makes to 'chemical constitution' the more 'remarkable' the results will be, and it is only truth to say, the more unsatisfactory the results will be.

"Mr. Keep insists on this disregard of chemical constitution in saying 'never mind the chemical constitution if the result is satisfactory.' This is the true 'cut and try' rule. But would it not be better to 'mind' the chemical constitution sufficiently carefully to eliminate that obstructive 'if' from his statement? Our times will not admit of many experimental 'trials' to test physical properties arrived at by guess work in the metal yard. Such would be 'threshing over old straw.' Analyses of worthless castings, similarly to physical tests of imperfect test bars, may not teach much, but analyses of castings of valuable qualities have taught a great deal, and to those who have not this information the chemist can give it.

"In urging that physical tests of satisfactory castings shall be kept as standards, Mr. Keep is just so far right as he comprehends using irons the sum of whose chemical constituents coincide with his 'standards.' The various ranks of iron in the yard from which these standards were made up may, or may not, duplicate the physical effects. If the ranks are 'standardized as to

their chemical constitution' they will, and if not, not.

"When Mr. Keep, with his long experience, admits that 'were chemical analyses offered free of cost we could not use them to advantage except in scientific research,' he only forcibly expresses the great want of the foundryman, and the 'scientific research' he refers to is that of ascertaining what is known outside of foundry circles which would apply advantageously in that business, and to develop further facts in the same wide field that are not yet known. When the foundry business can ignore scientific research, it will be when less dissatisfaction with methods is manifest than at present.

"Mr. Keep desires to know why Mr. Wheeler and the chemists say the furnacemen are willing to sell iron on guaranteed silicon analyses, and intimating they cannot, because they require quite a range in that element when on a Bessemer product. So they do, from necessity, but this only on contracts of many thousands of tons made on a continuous run, and not to lots of 1000 or 2000 tons selected from their make to be put to foundry use. In this connection Mr. Keep intimates broadly that 'Bessemer' ores are not suitable to make 'foundry' iron. From Bessemer ores are made all grades of iron any ordinary mind could classify as a 'grade,' and suitable for any use to which cast iron is put. No grade is so vile nor yet so good that Bessemer ores will not produce them, and the fact that foundrymen go on paying more for so called 'foundry' iron than for precisely similar or better iron used by Bessemer shops, is only another evidence of their hide bound, old time prejudice in favor of well advertised 'brands.' At our modern blast furnaces Mr. Keep could see iron which neither chemist nor physicist could distinguish from the finest 'cold blast charcoal' iron, this coming from a hot blast coke fuel furnace making above 400 tons per day. From this all the way down—or up, as it may be—to high grade ferrosilicon, irons are at the command of foundrymen who endeavor to obtain the best quality for their special use at the lowest price, regardless of 'brands.'

"Has foundry iron any good characteristic not shared in common by so-called Bessemer iron, or any distinguishing characteristic except a higher content of phosphorus? Surely not, but makers of 'only foundry iron' do not desire this fact known.

"One uncertainty hinted at in the making up of a mixture of iron is the possible change of 'chemical' character by the effect of remelting in the cupola. The changes are well known in the Bessemer shops, and they are practically constant relative to cupola structure and regular melting practice. In foundry practice the practical man is misled chiefly because the resulting sums of the metalloids in the melted iron are not what he expected in his ignorance of what approximately was charged. The steel maker will melt 300 tons each 24 hours in each of his cupolas, have three or more melting together, run them a week continuously and not have his content of silicon vary more than one-tenth of 1 per cent. above or below what he aims at; this from several grades of iron of varying content of silicon and the admixture of from 5 to 30 per cent. of steel scrap, according to whether he has much or little of it to 'work up.' They must do their melting with such precision as to content of silicon, for the heat require-

ment is so arbitrary that a missing one-hundredth of 1 per cent. of silicon calls for the burning up of 22 pounds of iron in a 10 ton conversion, and an excess of each one-hundredth of silicon imposes a corresponding duty at some expense to reduce conversion temperature. Is such cupola practice more refined than that of the foundryman? If so, why? If the steel maker can melt 1000 pounds of his refractory mixture with 100 pounds of coke, continuously and readily, why should not the foundryman maintain as good chemical results when using nearly a third more fuel and in short melts which do not distort his cupola lines? There is a slight increase of carbon and a small decrease of silicon; but the difference is so slight, and, moreover, so regular, that it enters positively into the equation. To be more explicit, an iron with, say, 3.7 per cent. of carbon, will rise to 3.8 per cent.; while its silicon of, say, 2.00, will fall to 1.80 per cent. Coke containing not over 1.25 per cent. of sulphur will give to the iron melted not more than 0.03 per cent. additional to its original content. These effects result with ordinary conditions prevailing, and which should obtain in all foundries having a reasonably proper cupola. What is there in such chemical changes to interfere with an intelligent conception of final results, when there is knowledge of the chemical constitution of the metals before melting?

"Mr. Keep remarks that 'chemists often say what is perfectly true, that neither foundrymen nor furnacemen know what chemical constitution is required to make the best castings,' and he adds, 'but the reason is that other things as important enter into the problem.'

"If the foundrymen knew the chemical composition corresponding to the physical conditions, the earnest inquiry they are now making would not have been made, which goes without saying. Their inquiry indicates they feel confident that there is a positive relation between the physical and chemical qualities, and they want to know it. Are they to be discouraged by statements unsupported by evidence that there are 'other things' which will be a stumbling block to them after they have demonstration of the chemical and physical relation? The remelting bugaboo is harmless. What are the 'other things'?

"The little knowledge on true 'foundry chemistry' which has come to the foundryman has created a desire for more, for all that is attainable; and the inquiry will be continued, and ultimately satisfactorily answered; if not to the present generation of foundrymen, or to those of the last one who cling to the 'rule of thumb,' then to the progressive ones who will follow, for, unless the signs of the times are deceitful, none will be left to follow who are not progressive. The undersigned may be pardoned for the interest taken in this subject, when stating that, having spent 17 years in foundry work and had his experience with iron broadened by 23 years' work in blast furnace and Bessemer operations, he takes a firm stand with those who advocate the dissemination of as much of metallurgical chemistry as applies to foundry work; as much as that important art demands for its fairly full development, and to such end will faithfully labor."

A letter from Chas. F. McKenna of the Analytical and Assay Laboratories of Dr. Gideon E. Moore of New York was then read, in which he expressed regret at his inability to attend the meeting, and said, in regard to Mr.

Keep's paper: "As I understand Mr. Keep, he has reached the conclusion, after many years' observation, that his own skill in judging of iron needs no aid from the chemist. He follows it up with the conclusion that no founder would need this aid if he would adopt his methods. A certain physicist once made the assertion that the eye, considered as an optical instrument, was imperfect. Nikola Tesla has cleverly and neatly made the point against him that he must have forgotten that it was with the eye that the laws had been discovered which furnished the daring scoffer with the facts for his argument. I would say to Mr. Keep that he has forgotten that it was through the aid of chemistry that he has attained the largest proportion of what he knows about the composition of iron. He has climbed to an enviable height on his ladder of knowledge, and now he wants to kick it away, or at least knock out its strongest rounds.

"There may be many foundrymen of excellent intuitive knowledge of metals. I know some whose experience has been put to such good account that their skill in judging by physical aspects alone is marvelous, but none of them even could have failed to add to their sum of knowledge had they been able to use coincidentally all that chemistry could teach them of the material in hand. As a clever gentleman said at your last meeting, every lot of pig iron is truly an alloy, differing from every other lot according to difference in chemical composition, infinitesimal though that difference might be. The greatest advance that has ever been made in metallurgy is that which has followed the observation of the importance of the influence of minute changes in composition. How can this elusive cause of differentiation be studied and watched without the aid of chemistry? Will it pay? is another question, and its answer can safely be sought outside of discussion. Each firm or individual will have to answer that for himself. But surely the time is coming when every foundryman who wishes to keep up in a march which was late in beginning will have to find some way to tap this source of knowledge and power, which has for some time been open to those favored with abundance of capital.

"Perhaps the opportunity will come by your association making a determined and organized effort to collect, tabulate, arrange and publish for the use of its members authentic information on cast iron tests from reliable sources, involving specific gravity, fracture, color, grain, analysis, breaking strength, melting point, fluidity, shrinkage, and any other chemical and physical data obtainable. All could contribute to this Clearing House of information and all could draw from it."

The secretary then read a copy of the letter addressed by W. J. Keep to the editor of *The Iron Age*, which letter appeared in the issue of that journal of March 8.

Discussion.

J. E. Haines, instructor in chemistry at the Friends' Central School, Philadelphia, said: "I have spent several years working in chemistry, and have made a little specialty of the metallurgical line. It is natural that I should, therefore, disagree with Mr. Keep in regard to his paper. Some statements made therein I know to be wrong from my own experience. He makes a statement to the effect that 1 per cent. of sulphur in the fuel used in

the cupola will not affect materially or harm the iron or castings made therefrom. A few years ago I was employed with a company making a soft gray iron containing practically no sulphur, and we were shipping a lot of it to a well-known firm. We shipped a little order to parties in New York, who a few weeks afterward sent to us a casting and made complaint as to the quality of our iron, stating that it was impossible with the iron sent them to make a good soft casting. We thought it could not be the iron, and asked them to send us a sample. The casting was white and brittle and hard. We then asked them for a sample of their fuel, and they sent us some pieces of very nice anthracite coal which they were using. I analyzed it and found it contained nearly 1 per cent. of sulphur. The casting contained 0.15 per cent. of sulphur. The sulphur came from the fuel, undoubtedly. In this particular case the sulphur made a very decided difference and spoiled their castings.

"The second point Mr. Keep made was that at the iron works or blast furnaces where foundry iron was made chemists were not employed. I am surprised that he should make that statement. I am certain that on inquiry it would be found that nine out of ten of such concerns employ them, and a chemist is quite an important man at the furnaces. I hope he has not read his paper, because if he has, the iron chemist has no business upon the earth, and personally I should hate to be cut off in the glory of my youth. The argument he brings up in regard to the non-employment of a chemist in foundry practice is about the same as that brought up a few years ago. I think no one will deny at the present time the value of a chemist in steel works. If that is the case why should he not be valuable in the manufacture of castings. If he is valuable in one he would be of some use in the other. I am willing to admit that a man cannot make good castings by mixture alone. If a chemist had a laboratory and were simply to analyze iron there, the best results from his services would not be obtained. But if he were to go into the foundry and see the conditions under which castings were made, I have no doubt his knowledge of chemistry would be turned to advantage. Chemistry will not do everything. I am inclined to think that Mr. Keep's opinion is based on the fact that he could employ men just from college, knowing little, but who would make all kinds of assertions, which would not pan out. That kind of chemistry would not do much good. Simple theoretical knowledge does not answer in the manufacturing line, it requires some practical work; and when the two are combined you have something which will prove of value. It seems to me, from Mr. Keep's letter, just read by Secretary Evans, that he is trying to cover up what he said, because he admits in that letter that chemistry is of some use; and I think, and am convinced, that all these points which he brings out can be settled, partially at least, from a chemical standpoint, but you must combine some other practical work with it. There is one point Mr. Keep makes with which I am in full accord. It is that when you have a good result stick to that result and make your other irons agree with it if you can. But, as Mr. Fry says, this is not the time to experiment with iron. A man cannot afford to make a lot of castings on a probability that they will not turn out right. He must know that they will

be all right, and to know this well and thoroughly and depend upon them calls for some chemical knowledge. These results may be best brought about when we have men who can determine beforehand from the composition of the iron employed what will be the results of its use."

Mr. Glover: I think if Mr. Keep's paper is read carefully it will be seen that he admits blast furnacemen do keep chemists, but states that they are kept for the purpose of analyzing materials, not iron.

Mr. Flagg: I would like to ask Mr. Haines whether he remembers the total carbon in the iron which he mentioned as being affected by sulphur?

Mr. Haines: No, I do not.

Mr. Babbitt (chemist to the Wellman Iron & Steel Company): I think the redeeming features in Mr. Keep's paper are, 1, that he admits the value of physical tests, which admittedly brings the matter within the light of 50 years; and, 2, that he admits that silicon has a great effect, as he claims, the total effect which brings the subject down to 20 years ago. Now, about 15 years ago the majority of steel makers thought they had no reason to suspect other elements and that if they knew the amount of carbon in their material they knew all about the steel. I think in 1879 or 1880 I first made the suggestion that I should determine the manganese in every heat. This was thought well of and now there are no well regulated works in the country that do not make determinations of all the elements possible to be found in their steel, and find the physical tests vary with each element. Taking silicon as a basis, I think if a systematic investigation is carried on in connection with the mechanical work in the foundry and with the physical tests from test bars or from castings, it will be found that all the elements are a greater or less factor in the merchantable qualities of the casting. I do not think spasmodic or partial analyses will amount to anything. One point Mr. Keep makes is that sulphur is not such a great drawback as is generally supposed. A sulphur trace may not be so, but it has certainly more or less effect. If founders would get together and analyze each heat from the cupola in each day's run, they would get a lot of tabulated results. Possibly not in a year would they get a general formula, but they would find that each element has a great effect on castings.

John Birkinbine being present was invited to state his views on the subject. After a graceful tribute to the abilities of the gentlemen who had taken part in the discussion, Mr. Birkinbine said: "Mr. Fry speaks about Bessemer iron and foundry irons, and accuses you of paying more for foundry than for Bessemer. I am much surprised at your doing this, for, as a rule, Bessemer ores cost more than ores for foundry irons, and require just as much coke and labor to smelt them. Why you pay more for foundry than for Bessemer irons, which require more expensive ores, I do not know. You probably pay for an iron you know a good deal about. I am aware that some pig irons bring a larger price than others, and when you pay the price you probably know exactly what you are getting. It is really the reputation of the iron you pay for. I do not detract from the quality. The men who melt them place their reliance upon them because they are always the same. I think if you will investigate the matter you will find that the fancy prices Mr. Fry refers to

are not made merely because the iron is a foundry iron, but because it is an iron you can depend upon. I believe chemistry is essential for good foundry practice, quite as much as for steel practice. The line of demarcation between iron and steel you cannot indicate. There are certain valuable elements in steel which in iron have the same value. The question is whether we are not on the verge of studying more completely the subject of alloys of iron. During the exhibition at Chicago it was my privilege as one of the judges to examine the exhibits of the Russians. They were perfectly marvelous. The exhibit which attracted my attention most was not the beautiful and fine castings, which were almost equal to the bronze castings, but a piece of iron on the floor, which you and I would have taken—and did take—for a piece of rolled iron. It was about $1\frac{1}{2}$ inches wide, 8 or 9 feet long and $\frac{3}{4}$ inch thick. I could pick it up and bend it into a bow. It was a cast piece. We do not know how they make these beautiful castings, and they are smart enough not to tell us. I believe it is not in the mere foundry work of casting, and that you will discover that they are made by an alloy of another metal with iron, which enables it to be cast in this marvelous state. There were some kettles in the exhibit, probably 30 inches across. You could place one on its side and bend it down and it would bound back, fully as resilient as an ordinary tin basin. My impression is that these kettles were made by alloys. Foundrymen may some day see what they can gain by alloys of metals with their iron or steel."

Mr. Wright: I would like to ask one of the chemists here this evening, Mr. Babbitt, what, in his opinion, is the minimum amount of tonnage that an ordinary gray iron foundry could run to make it pay to fit up a laboratory and employ a good chemist—that is, supposing you could allow a year for the fitting up of the laboratory and to get the foundry in shape.

Mr. Babbitt: I am not familiar with the prices of castings or the amount of profit, but it seems to me that, judging by present prices, an ordinary foundry could not employ a chemist for the work. A number of foundries could, however, combine, and the individual cost would be small—possibly not more than \$30 or \$40 per month.

Mr. Wright: Then, under those conditions, how could a chemist, 3 or 4 miles from a foundry, arrange to be of service? I understood you to say that the results the chemist gains are largely due to a number of records. If the chemist was not on hand and watching all that was going on, how could he be of service to the founder?

Mr. Babbitt: That is very true. At the same time, with a competent foreman who could watch the mechanical operations and explain them to the chemist in order that the latter could compare the foreman's notes with those of the laboratory, the same result could no doubt be obtained.

Mr. Wright: Under those conditions should we not be making a chemist of the foreman?

Mr. Babbitt: I think not. For instance, the foreman could make certain tests right in the foundry and ascertain the chill, shrinkage, tensile strength, breaking strain, and so forth, and give the chemist his ideas, and, if necessary, samples of the different irons, fuels, and even the sand that was used, particularly in the facings.

He could also watch the temperatures. If this were done it would hardly be necessary for the chemist to be on the premises all the time.

Mr. Flagg: Taking the commercial side of the chemist, where do we get the direct return value for the chemist? Do we get it in buying material? Does the chemist directly save his expenses?

Mr. Babbitt: In part directly and in part indirectly. Several irons would probably be used which you were accustomed to throw out as being unfit for use. Again, you could get a uniform iron on which you could base price.

Mr. Flagg: If a chemist could save \$1 a ton on castings, or \$2, or \$5, there must be sufficient protection to the founder to warrant the employment of a chemist. A foundry melting 5 tons a day could not employ one, while one running 25 or 50 tons could.

Mr. Wanner: As a layman I am not expected to go into chemistry. We have, undoubtedly, been benefited by the information obtained in these discussions; still we are left in much about the same condition as before. These gentlemen are both right and wrong, in my opinion. They are doing the best from their standpoints, and it must be said for Mr. Keep that he did not take the exact position attributed to him. It is very natural for gentlemen when they are attacked in their fortifications that they should resent the attack. To that extent we receive probably more information than we could have received, because it agitated the matter more keenly. Now, in our line, and in my experience, we can make castings for a month or two and have no trouble at all. Our castings may be just as we want them to be, and yet after running a month things go wrong, and we may have a big loss before we realize it. A chemist close at hand would help you out. If a founder cannot afford to keep a chemist we should all be satisfied with the importance of not being too far removed from one and call in his services.

Mr. Flagg read several extracts which he had collated from various sources, and tending to show the benefit derived from chemistry. The extracts included some from *The Iron Age*, and part of a chapter from a work by Dr. Dudley.

Asa Whitney (of A. Whitney & Sons): Referring to the extract read from Dr. Dudley's work, I would ask Mr. Flagg to read the analysis showing the difference between a good wheel and a poor wheel.

Mr. Flagg: I will hand you the paper.

Mr. Whitney: The difference between the two analyses given is certainly very slight, and caused Dr. Dudley and others to believe that there was nothing in the ultimate analyses of car wheels of cast iron to indicate such a difference in physical qualities as existed in this case. In our work we are regulating our mixture daily and work with less differences than brought out in this example. A less difference in analysis will cause a decided physical difference. For the past two years we have made up our mixtures entirely from the figures of the analysis of each iron without regard to the physical properties of the irons themselves, and this course was based on eight years' experience prior to the application of the theory. The only thing physically tested is the result. It is thoroughly tested at the beginning, middle and end of the melt. The ultimate analysis is thus proven to be sufficient for practical work, which is the point which seems to have been doubted

by Dr. Dudley and others. Mr. Keep refers to foundry chemistry not being so applicable to soft iron mixtures as possibly in car wheel mixtures, as mentioned in his letter read this evening. I found these soft iron mixtures more easily regulated by the chemical system than hard mixtures. As an example, I have here a paper which I wished to refer to Mr. Keep at the last meeting, when he was expected to be present, in order to ask him how he would apply his physical tests to a miscellaneous mixture of soft iron borings. In one case I used 25 per cent. of these borings with 75 per cent. of two kinds of Scotch pig. The result was a soft mixture with a required strength of 16,000 pounds to break a 2 inch square bar 1 foot long. The shrinkage of this was only 0.085, with very good elasticity. In Mr. Keep's mixture the shrinkage was 0.131, but my bar being 2 inches square I cannot compare the strength accurately. In another case we used 50 per cent. of borings with a resulting strength of 13,000 pounds and the same elasticity and a shrinkage of 0.118. This latter mixture showed no chill when run out $\frac{1}{8}$ inch thick on an iron surface. There is one other point brought out in Mr. Keep's letter to which I wish to take exception, and that is the necessity of changing one iron at a time in the regulation of a mixture. This is certainly a wise precaution in ordinary practice, but by the chemical method we are perfectly at liberty to change every iron in the mixture at short notice. In fact, for to-morrow's mixture of 50 tons of a car wheel iron I have changed nearly every iron in the mixture excepting the scrap without locking at the grain or having made any physical test of any of the irons, the calculation being made simply from the figures of the analyses, and the result will be satisfactory as usual.

Secretary Evans: I would like to ask Thos. Devlin, who has melted and sold by chemistry, to tell us whether he intends going back to old time methods or to continue the use of chemistry.

Mr. Devlin: Previous to our employing a chemist we very frequently had to anneal all our small castings. This has been almost the universal practice. Now we do not have to do it. We used to calculate that it would cost us at the least $\frac{1}{4}$ cent per pound for this. We do not anneal now nor do we have any castings sent back to us because they are hard. Before we employed a chemist we frequently had them sent back on account of hardness or brittleness or other fault. We also use our chemist in the purchase of material and we find we have an advantage in that. Some irons, if they do not come up to agreement, are refused by us. We have a shipment in our yard now, refused acceptance. We find we can buy and use a great many things that we once thought we could not utilize. This week we bought some coal oil that was warranted to be 150° fire test. We found part of it to be 104°, another part 109° and the rest 120°. The same inspection may be given to purchases of lard oil, coke and coal. We got one car of coke that contained a fraction over 1 per cent. of sulphur. We notified the shippers and they replaced it with a car of the best coke we ever had and the most free from sulphur. The same safeguard is apparent in everything we buy. That is my experience so far.

Silver importation has been prohibited by the Persian Government, except such as is ordered by the mint.

The Sebenius Rotator for Steel Ingots.

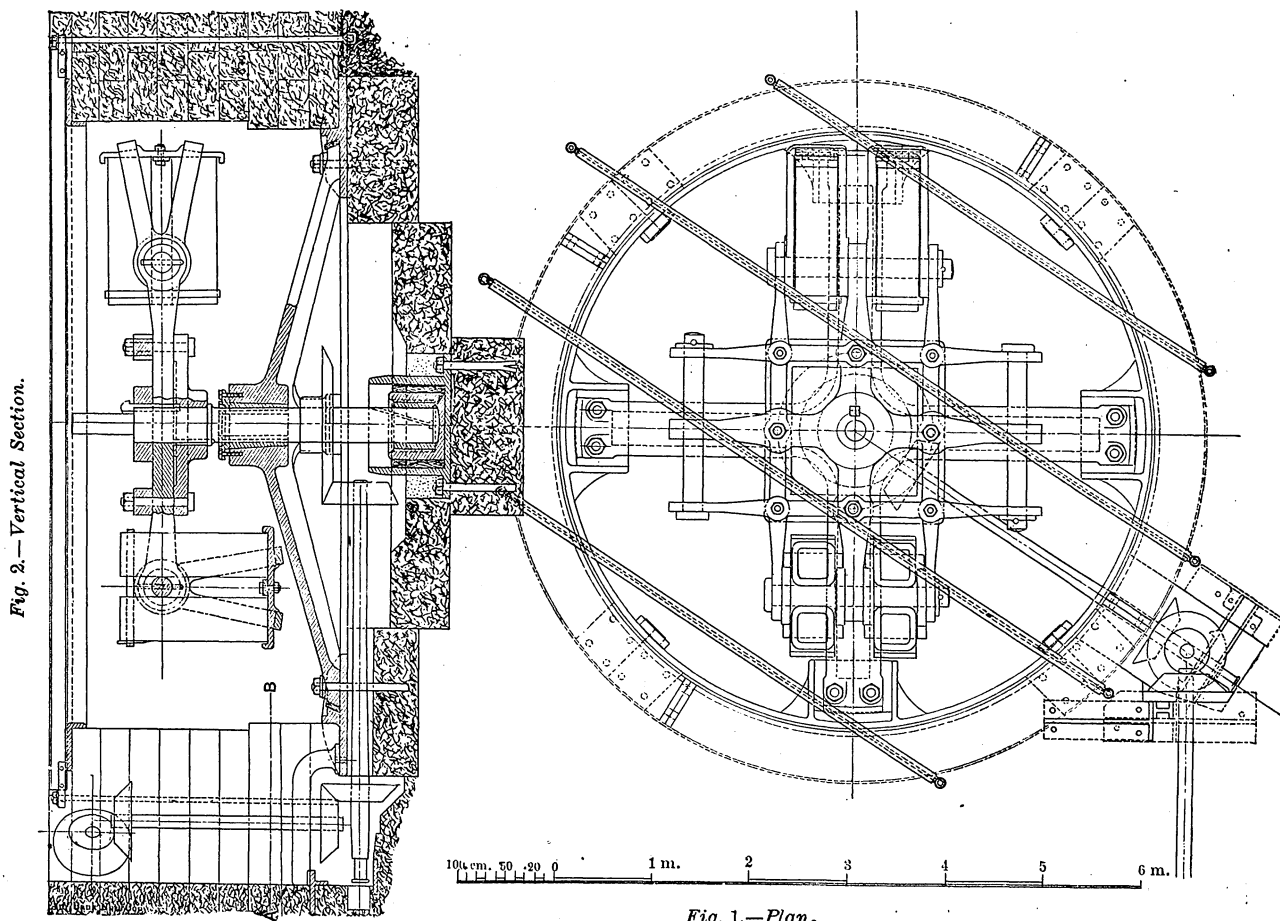
The discussion of a paper by Richard Akerman of Stockholm, Sweden, entitled "The Bessemer Process as Conducted in Sweden," read before the International Meeting of the American Institute of Mining Engineers, brought out a contribution by J. L. Sebenius on the rotator. Repeated reference to this machine has been made in the technical press, but we believe that the statement printed is the first authoritative one by the inventor himself. We quote as follows:

Every steel manufacturer is well acquainted with the many and great dif-

ever, and thus the result of the stretching process is only that the holes have been pressed out and the inclosed gases have been compressed.

During the many years I have been engaged in the manufacture of steel I have tried many different ways and means to prevent the forming of blow holes, and by using silicon and aluminum I have partly succeeded. But what has been gained as to the density of the material has been lost in its purity and quality. Furthermore, by adding silicon and aluminum, it is not possible to rid the steel of the large amount of gases absorbed by it in its fluid state. These gases are merely distributed and the result is a large number of very small blow holes throughout the ingot.

performed by this apparatus is such as to give entire satisfaction. As far as simplicity of construction, strength and durability are concerned, I believe nothing more can be expected. Two of these rotators are now in operation in Sweden, and several are now under construction in other countries. The machine is shown in the accompanying drawings. It consists of a horizontal yoke, attached firmly to a vertical shaft. The yoke itself is composed of arms set radially at right angles to each other, and to the end of each of which is fastened, by means of a pivot, a strong steel trap, movable in the vertical plane around the pivot. In this trap the molds are placed. When the apparatus is set in



THE SEBENIUS ROTATOR FOR SOLIDIFYING STEEL INGOTS.

iculties caused by blow holes in steel ingots, especially when it is desired to produce steel of the best quality. It is well known that the number and size of the blow holes in the ingots increase as the amounts of phosphorus, sulphur, manganese and silicon decrease. For instance, a steel rich in silicon may give a fairly good ingot (although a number of blow holes may be present in that case also), while a steel fit for the manufacture of tools, &c., gives an ingot which, when broken open, presents the appearance of a sponge.

In hammering and rolling the steel, these blow holes, of course, are contracted, their walls are pressed together, and at first glance the bar or rail appears to be perfectly sound and homogeneous. A closer examination, however, reveals that this is not the case, but that through the rolling and stretching the walls of the blow holes have been brought in closer proximity to each other, but without any joining what-

Only during the last few years have I been able to overcome all difficulties and to get rid of the gases without adding any detrimental substances. And I am now able to produce steel ingots perfectly sound and of superior quality.

This result was first reached after I conceived the idea of bringing the liquid steel directly at the close of casting under the influence of centrifugal force. As the steel gradually solidifies the gases, which heretofore have been dissolved in it, are liberated. If force, or only an insufficient force, is acting upon the steel these gases remain inclosed in the ingot, forming bubbles or blow holes; but if, on the contrary an adequate centrifugal force is acting on the metal they are forced to leave their position and move toward the center of rotation.

The next step was to construct an apparatus by means of which the melted steel could be brought under the influence of centrifugal force. The work

rotation, the trap and the molds, with an increasing speed, deviate from the vertical position, until finally, when full speed is attained, the molds have taken up a radial position with the open ends turned toward the center of rotation. When the machine is brought to rest, the molds again take up their former vertical position.

The liquid steel is poured into the molds above referred to from one or two ladles, so constructed as to fill four molds at once, thus avoiding unnecessary loss of time. The fluidity of the liquid steel is an important factor in attaining the desired results. As soon as the molds are filled the rotator is set in operation, and a speed of about 120 revolutions per minute is maintained until the steel in the mold is solidified. During the whole time of rotation gases are seen to escape from the open ends of the molds, and when they cease to do so it is known that the steel has taken up the solid state. For ingots of,

or instance, about 15 inches square the solidification will require about ten minutes, and for every ton treated in this way about 5 to 6 horse-power will be required.

If Bessemer or open hearth steel is "centrifuged" the resulting quality is the same as that of ordinary crucible steel of the same chemical composition. This can readily be explained: The crucible cannot change the steel in any other way than by making it denser, and thus the ingots sounder, and if this soundness can be effected by other means crucible and centrifuged steel of the same chemical composition must show the same physical qualities. In steel of a high percentage of carbon the ingots, as generally made, show an inner core clearly harder or higher in carbon than the rest of the ingot, which feature, of course, is very objectionable. The centrifuged steel does not show this defect. The physical and chemical conditions are the same throughout the entire ingot.

Here, however, it must be observed, that steel of high percentage of carbon shows, on the upper surface of such a centrifuged ingot, a light skin, a fraction of an inch in thickness, which proves to be somewhat harder than the rest of the ingot. This fact I should explain in the following manner: When, in an ordinary ingot, the liquid steel is solidifying, this action commences at the outer edge of the ingot and, proceeding inward, particles of carbon refuse, if I may use such an expression, to unite with the solidifying mass of steel, and these particles, in the form of carbon, or, it may be, a carbide of iron, work their way toward the liquid center of the ingot, where they are ultimately captured by the final solidification of the entire mass of steel. In "centrifuging," on the other hand, these particles, whether carbon or carbide, on account of the centrifugal force, and their lighter specific gravity, are forced out of the liquid steel, and, as they can hardly be expected to disappear, as the gases do, they naturally must be somewhere in the ingot, and they are, in fact, found in the very edge of the upper end. Here, however, they do no harm, since some small part of the end of the rolled out ingot has to be sacrificed any how, on account of the "piping." When this small part has been cut off, every rod, bar, rail or plate manufactured from centrifuged steel is perfectly homogeneous, and shows throughout exactly the same chemical qualities.

The drawing shows a simple, durable and inexpensive machine. Once built it requires but little attendance. Through this method the following advantages have been secured:

1. Ingots are obtained free from blow holes and sound, without adding any detrimental substances whatever.
2. The amount of carbon in the steel is evenly distributed throughout the whole ingot.
3. The piping is reduced about 60 per cent.
4. The amount of fuel used in the heating furnace is lessened, for the reason that, as there are no blow holes, no welding heat is needed; and, for the same reason, time is saved and also the material that would be lost through oxidation in a more intense heat. All the heat the ingot requires is only what is needed to make it pliable for the rolling mill.
5. The steel, after being centrifuged, shows all the physical qualities of a crucible steel of the same chemical composition.

Reorganization of the Southern Iron Company.

At a general meeting of the bondholders of the Southern Iron Company, held at the company's office in Nashville on September 18, 1893, the Central Trust Company, New York, trustees, under the terms of the mortgage made to secure the payment of the bonds, were requested in writing by a very large majority of bondholders, because of the non-payment of interest coupons, to proceed to sell the property described in the mortgage. At this meeting the bondholders also appointed a Purchasing and Reorganization Committee, composed of A. M. Shook, G. M. Fogg, J. C. Warner, H. Justi and Robert Ewing, who were authorized and requested to attend and purchase at the sale all the properties of the company for and on behalf of all bondholders choosing to come in, and also organize a new company on the plan approved by all the bondholders at that meeting.

At the sale, which took place recently at Huntsville, Ala., this Purchasing Committee, as authorized and requested, bought at nominal prices the various properties of the company and proceeded at once to organize a new company under a charter granted by the Legislature of the State of Alabama. The new company will be known as the Central Iron Company. The following directors were elected: A. M. Shook, G. M. Fogg, J. P. White, R. L. Pulley, J. C. Warner, J. P. Williams and Robert Ewing. The directors elected as officers of the new company: Robert Ewing, president, and J. A. Cooper, secretary and treasurer.

The sale was conducted by Capt. T. M. Steger, representing the Central Trust Company of New York, who held the mortgage. The La Grange property was sold, subject to a \$300,000 old mortgage, for a nominal sum to H. B. Buckner, chairman of the Purchasing Committee named by the said bondholders.

All of the other properties of the Southern Iron Company were purchased, at nominal figures, by A. M. Shook, chairman of the Purchasing Committee, for the bondholders. Then the subscription book of the Gadsden Coal, Iron & Railroad Company, having a liberal Alabama charter, was opened, as arranged, and \$100,000 of stock subscribed. The subscribers then organized by electing Robert Ewing president, and J. A. Cooper secretary-treasurer; A. M. Shook, R. Ewing, J. C. Warner, John P. Williams, John P. White, G. M. Fogg, R. L. Pulley of Huntsville; James Swann of New York, T. M. Steger, directors.

A resolution was adopted calling a meeting of the stockholders of the Gadsden Company to be held at Huntsville April 5, for the purpose of increasing the capital stock, changing the name to the Central Iron Company and of issuing bonds in accordance with the plan of reorganization agreed on of the Southern Iron Company.

The Central will have \$2,000,000 of bonds upon the property, \$2,400,000 of preferred and \$900,000 of common stock.

Under the reorganization the Southern Iron Company bondholders will get 35 per cent. of Central Company bonds and 65 per cent. of its preferred stock. The holders of the \$300,000 of preferred Southern Iron stock will be treated on the same basis. The holders of Southern Iron Company common stock will receive one-third the face value of it in Central common stock.

The new company will have about \$1,500,000 less securities than the old.

An injunction has been issued to holders of Southern Iron bonds to send them in to the officers of that company in order that old bonds may be exchanged for new.

The New Quincy Hoisting Plant.

The E. P. Allis Company of Milwaukee, Wis., have contracted to erect a new hoisting plant at the Quincy copper mine, Hancock, Mich. The shaft which is to be thus equipped is not vertical, but is sunk at an angle of 52°, and extends below the bed of Lake Superior. The engine will consist of a pair of 52 x 84 inch cylinders, jacketed to 48-inch diameter, with a frame of their 1890 design. There will be a separate engine, 16 x 30 inch, for working the brake, and another engine, 14 x 24 inch, for operating the reversing gear, which is of the type known as the gravity leverage and float system.

The winding drum is to be of steel, 26 feet in diameter and 15 feet face, with two brake bands, each 15 inches wide. The construction of the drum will be interesting. The shaft will be 26½ inches in diameter and 28 feet long. On this will be keyed an enormously heavy hub, 7 feet in diameter, from which three sets of spiders will radiate, each having 12 arms made of 7½-inch steel tubes, with their outer ends secured in a cast steel rim. On these rims will be riveted 1-inch steel plates, which will form the surface of the drum. In this surface the grooves will be cut in a spiral. The rope or cable will be of steel, 1½ inches in diameter at first, but will be increased to 1¾ inches as the depth of the shaft requires it. The arrangement is such that the drum will be continually full of cable. As the rope of the descending car reels off from the upper surface of the drum, it is followed up immediately from the under side by the cable of the ascending car. The weight of the rope on the drum will be 22 tons.

The engine is guaranteed to hoist a load of 10 tons at a speed of 2500 feet per minute. The engine will be provided with a special safety stop mechanism, which will shut down the engine and stop the cars within a space of 40 feet when at full speed, in case the engineer should neglect to stop the engine at the proper time. The magnitude of the plant will be better appreciated when it is stated that the total weight will approximate 725,000 pounds.

A recent test of the submarine boat which was carried out at the naval torpedo station, Newport, R. I., one day last week, is reported as having been entirely successful. The boat was moored for the trial in 8 fathoms of water, and was submerged about 15 feet. The mine, containing 100 pounds of gun cotton, was submerged to a like depth, but in 7 fathoms of water. Under these conditions, according to Abbott's formula, at a distance of 305 feet there should have been a pressure upon the shell of 80 pounds to the square inch, which is estimated to be the pressure which the shell can stand without collapsing. It did not collapse and the explosion was a most successful one, there being two distinct concussions, which were severely felt in a launch 250 yards away. The first concussion was from the direct explosion, while the second came from the bottom. A column of water, pear shaped, rose into the air for fully 50 feet.

A Good Performance of a Blowing Engine.

In *The Iron Age* of June 22, 1893, we described and illustrated a Philadelphia Corliss horizontal blowing engine built for the Poughkeepsie Iron Company by the Philadelphia Engineering Works (Limited). It is not, therefore, now necessary to offer more than a general account of the engine in order that the reader may appreciate its performance. The steam cylinder is 50 inches in diameter, the valve gear being operated by two independent eccentrics, to permit of a very long follow when the pressure becomes excessive and the steam simultaneously low, which is sometimes the case when the furnace gets into difficulties. The steam follow, and thereby the number of revolutions, is, as usual in Corliss engines, regulated by the governor, and the speed of the engine is varied by altering the relative speed of the governor and the engine by a friction plate and leather bush wheel. By moving the bush wheel toward the center of the friction plate the engine will run slower, while on moving

plate down to the bottom of the foundation. There are in all 22 2-inch foundation bolts employed, with an average length of about 14 feet. The fly wheel is 24 feet in diameter, built in ten segments, upon a hollow center. It weighs with the center 50 tons, shipping weight. The shaft is steel, 18 inches in diameter. The bearings are 30 inches long. The engine is designed to blow the furnace up to 20 pounds pressure per square inch.

The Indicator Cards.

It will be noticed from the two cards—Fig. 4 being one taken at 47 pounds gauge pressure and Fig. 5 at 40 pounds, the blast pressure being in each instance 12 pounds—that the steam admission is very tardy.

The ports are square across the cylinder, while the valve edge that opens the port is made in V form, and the valves are set with practically no lead, this lead being only a corner in the middle of the valve. As the valve opens a full port is uncovered when a practically horizontal line is obtained at point of release. There is practically no lead to the exhaust valve and a tardi-

It is not the resistance of the outlet valves that makes the hump in the middle of the blast cylinder card, but it is the inertia of the moving column of air in the very long 24-inch blast main carrying this air to the fire brick stoves.

A number of blast cylinder cards, all showing 12 pounds pressure, average 9.2 pounds, which multiplied by the area gives a total pressure of 50,977. Whereas the steam cylinder cards taken at the same time show a mean effective pressure of 30.25 pounds, which multiplied by the area is 59,380. This shows 14 per cent. as the total friction of the steam engine and blast cylinder with the power required to draw the air into the cylinder, while it is instructive to know that if the blast pressure by the gauge is taken, the engine is blowing 12 per cent. more pressure than the mean effective pressure of its indicated cards multiplied by the ratio of the cylinders.

An Impromptu Test.

In this test the engine was running at 22 revolutions per minute, under a blast pressure of 11 pounds, when the pressure suddenly ran up to 22 pounds and then instantly dropped to 4 pounds, and there was seemingly no perceptible change of duty. We cannot better explain this test than by quoting as follows from a letter to the Philadelphia Engineering Works from Edward Doud of the Poughkeepsie Iron Company, under date of February 3, 1894:

"The furnace, which had been doing exceptionally well for a long period, has for a few days been suffering from a dirt scaffold and slips, occasioning extreme and sudden changes of load, giving a most favorable opportunity to study the action of the engine, as well as affording severe tests. At one time, while the engine was going 22½ revolutions, with blast pressure at 11 pounds, the blast discharge at or into the furnace was suddenly obstructed. I was standing by the engine and saw the pressure go up to 22 pounds, then the snort valve was opened and it went down to 4 pounds. Meantime the engine governed correctly, and there was no perceptible change in the speed. At this high pressure there was no jar of the engine or special effort apparent.

"Two oil blow pipes were applied to the tuyeres to open them and the engine was run at five revolutions, giving a blast pressure of 15 pounds. At times one of the blow pipes would be closed, at other times the blast would be turned out wide to the atmosphere without affecting or changing the speed of the engine, while the resistance would vary from 2 to 20 pounds. On one occasion the engine ran steadily only five revolutions per minute while blowing 15 pounds pressure per square inch. This is certainly very excellent work—the best I have ever seen.

"This Corliss condensing type of blowing engine seems to be especially adapted to carrying a blast furnace through a difficult scrape, as it is so economical in steam. While this fight was going on the gas was very weak, and yet little or no firing was required. It seems that the double eccentric gear of the steam cylinder is desirable and provides for the necessary careful adjustment of the valves for this work. The positive inlet and metallic outlet valves (which latter cushion upon their own air dash pots) work admirably and deliver the volume of air expected from the displacement of the piston, proved by the amount of fuel burned by the quantity of air delivered."

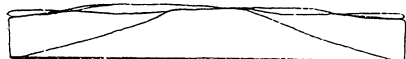
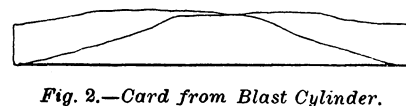
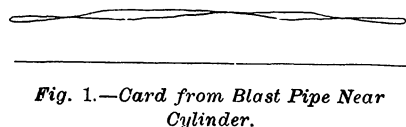


Fig. 3.—Cards 1 and 2 Superimposed.

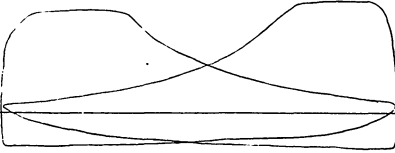


Fig. 4.—Card from Steam Cylinder at 47 Pounds.

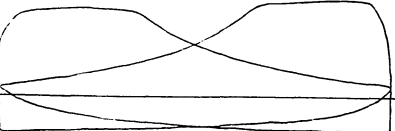


Fig. 5.—Card from Steam Cylinder at 40 Pounds.

A GOOD PERFORMANCE OF A BLOWING ENGINE.

it out the engine will run more rapidly, the variations in speed amounting to about 60 per cent.

The third eccentric is employed to operate the inlet valves of the blowing cylinder. These valves are 15 inches in diameter, and are as wide as the cylinder itself. The ordinary wrist plate of the Corliss gear is employed—that is, "the lazy action," whereby the valve opens and closes very rapidly, and remains almost motionless when closed.

The outlet valves are made of phosphor bronze and have flat seats. In closing the valve seats against an air cushion formed within itself by a piston upon the stem, and in opening it cushions upon leather rings upon a large bumper.

A spring is provided of merely sufficient power to slide the valve close to its seat and to offer but little resistance to the free opening of the valve. Thus the air enters the cylinder through mechanically moved passages with perfect freedom, and its outlet from the cylinder is through valve openings without ribs or angles and past a valve that moves away from its seat with a very moderate resistance.

The frame is 43 inches high, and 1½ inches thick in the front and 1½ inches at the back, besides being ribbed across at every point where a foundation bolt is provided, and these foundation bolts pass directly through the top of the bed

ness in getting into the condenser. With the double eccentric gear on this engine it would be simply a matter of adjusting the eccentrics and rods to obtain the ideal card of an ordinary rotative engine with the straight initial line and by an early lead to the exhaust drop the pressure almost immediately to the vacuum of the condenser; but the blowing engine really has nothing to do at the commencement of the stroke, and the resistance is only gradually increased. As will be noted in the blast cards, Figs. 1 to 3, the slow induction of the steam and the retardation of the steam in getting into the condenser save a very heavy strain on the engine and a jerking at the fly wheels, which would materially wear the parts and increase the expense of keeping it up and the quantity of oil required. As it is, this engine moves with the greatest softness, and at the same time turns an exceedingly steady wheel. In fact, in no instance is there any indication of change in the speed of the fly wheel.

The card, Fig. 2, from the blast cylinder, shows a rapid falling off in pressure toward the end of the stroke, but card No. 1 explains that this falling off is due to the change of pressure in the pipe itself. This pipe is very long, and when rapid air speed is attained in this pipe it practically runs away from the engine as the piston slows up to turn its center.

Trial of the United States Battle Ship "Indiana."

The builders' trial trip of the new battle ship "Indiana" was carried out off the mouth of the Delaware River on March 9. It was pronounced to be the most successful of any of the first trials of the Philadelphia-built vessels of the new navy. The ship was put over the course of 9.65 nautical miles six times—three in each direction. The turns were made at full speed, and the test occupied five hours of continuous steaming. During this time everything is reported to have worked with absolute smoothness. The first runs were made with natural draft, the averages being 14.02 and 14.12 knots respectively. A moderate forced draft of $\frac{1}{2}$ inch air pressure was used for the next two runs, an average of 15 knots being the result. The last two runs were made under a forced draft of 1-inch air pressure, when the vessel made an average of 15.6 knots, with hardly any perceptible vibration.

This performance of the "Indiana" is regarded as eminently satisfactory, considering that her bottom had not been painted since her launch a year ago. Her side armor, turrets, guns, &c., have not yet been placed, so that she draws 3 feet less water than she will on her official trial. This will immerse her screws more deeply and presumably increase their driving power. Moreover, ordinary soft coal was used, while only carefully selected fuel will be employed on the official trip. In view of these circumstances it is expected that the vessel will ultimately attain a speed of at least 16 knots, and possibly more. A premium of \$25,000 per quarter knot will be earned by the Cramps for anything above 15 knots.

The announcement of a new course in practical chemistry at the Brooklyn Polytechnic Institute is exciting much interest. The course includes thorough instruction in experimental chemistry and the various branches of chemical analysis, pure and applied chemistry, and other branches necessary to the analytical and technical chemist. Special attention is to be paid to instruction and laboratory work in organic chemistry, and also to the study and testing of technical products, wastes, processes, &c. The new laboratories are commodious and are provided with the apparatus and chemicals required in analytical, experimental and research work. The course will include physics, modern languages and drafting. The study of chemistry begins in the freshman year, and in each successive year will occupy more of the student's time. Facilities are also to be given for post-graduate work in both pure and applied chemistry and in chemical engineering. The new chemical course will be under the direction of Peter T. Austen, late professor of chemistry in the New Jersey State Scientific School and Rutgers College. He will be assisted by William M. Grosvenor, Gillett Wynkoop, H. M. Baker, Jr., and others.

Edward Partridge, the famous Chicago wheat operator, has announced his final retirement from the speculative arena. Mr. Partridge's career on the Board of Trade has been a most remarkable one. His grain operations have been on a gigantic scale, amounting at times to as much as 10,000,000 bushels in one deal; and his profits are said to have been proportionately vast.

The Finished Iron Market of Canada.

Wire and Wrought Iron Pipe.

Bar iron has this month been reduced 10 cents per 100 pounds by the Canadian mills, the open quotation now being \$1.75 instead of \$1.85. The Bar Iron Association, which formerly controlled prices, was broken up some time ago, and the eagerness of the individual mills to secure the few orders going has led to the present cut. As the manufacturers decline to secure their customers against tariff changes, the business is of a hand to mouth character, and will continue to be so until the new duties are decided upon. No intimation has been given to the public of what changes are to be made in the tariff, but the new rates are expected to be announced by the Minister of Finance soon after the assembling of Parliament on the 15th inst. Canadians enjoy this advantage over their neighbors with regard to the tariff, in the fact that no protracted debates and divisions will retard the adoption of the changes decided upon by the ministry. The tariff being an essential part of the revenue programme, "as soon as the Finance Minister makes his statement the new tariff is in force."

Canada has several wire manufacturing factories. They make bright, annealed, coppered, galvanized, in fact about all the ordinary varieties of wire in iron, steel, copper and brass, from the largest to the smallest sizes, and also barb wire and wire rope. Nevertheless Canada's imports of various kinds of wire are an important item in her foreign trade. The quantities and values and the countries from whence obtained are indicated in the following official statement for the fiscal year 1892:

Wire.	Duty.	Country.	Hundred-weight.	Value.
Barb fencing	1½ cents per pound.	Great Britain.	158	\$587
Barb fencing	½ cents per pound.	United States.	1,713	5,363
Buckthorn strip and similar fencing.	1½ cents per pound.	Germany.	672	1,663
Buckthorn strip and similar fencing.	1½ cents per pound.	United States.	267	965
Wire covered with cotton, silk, &c.	35 per cent.	Great Britain.	271	6,584
Wire covered with cotton, silk, &c.	35 per cent.	France.	88-100	80
Wire covered with cotton, silk, &c.	35 per cent.	United States.	3,603	52,759
Crucible steel wire imported by makers of wire rope, pianos, needles, &c.	Free	Great Britain.	2,892	19,439
Crucible steel wire imported by makers of wire rope, pianos, needles, &c.	Free	Belgium	11	65
Crucible steel wire imported by makers of wire rope, pianos, needles, &c.	Free	Germany	15	908
Crucible steel wire imported by makers of wire rope, pianos, needles, &c.	Free	United States.	170	4,482
Galvanized or tinned, 16 gauge or smaller	Free	Great Britain.	3,255	5,275
Galvanized or tinned, 16 gauge or smaller	Free	United States.	35	563
Iron or steel wire, 13 and 14 gauge, flattened and corrugated, used in wire grip machine	Free	Great Britain	4	1,737
Iron steel wire, 13 and 14 gauge, flattened and corrugated, used in wire grip machine	Free	United States.	188	2,497
Wire rigging for ships.	Free	Great Britain.	5,523	19,945
Wire rigging for ships.	Free	United States.	761	4,479
Wire rope.	25 per cent.	Great Britain.	4,282	15,808
Wire rope.	25 per cent.	Belgium	135	624
Wire rope.	25 per cent.	Germany.	133	2,405
Wire rope.	25 per cent.	United States.	1,367	12,240
Wire of all kinds, n.e.s.	25 per cent.	Great Britain.	19,530	58,165
Wire of all kinds, n.e.s.	25 per cent.	Belgium	5,734	13,343
Wire of all kinds, n.e.s.	25 per cent.	France	9	29
Wire of all kinds, n.e.s.	25 per cent.	Germany.	11,522	31,290
Wire of all kinds, n.e.s.	25 per cent.	United States.	32,546	108,238

It is probable that some of the wire credited in the table to Great Britain and Belgium came from Germany through English houses, a mistake which occurs in other classifications of the customs department. The importations from the United States, however, are not liable to be astray from this cause, and it will be seen that the latter country furnishes Canada with nearly

as much wire as all the others put together. American low prices, indeed, are affecting the Canadian manufacturer despite the duty. The wire drawers in Canada, as well as the nail manufacturers, have an association for regulating prices. A few days ago the Ontario wire manufacturers announced an all around reduction in the price of their goods to meet the competition of American wire in that province. This cut, however, merely makes the price at the leading Ontario towns the same as at Montreal (the center of the industry), deliveries f. o. b. cars at Toronto and Hamilton having hitherto been maintained at 10 cents and at London at 14 cents per 100 pounds above the Montreal price. At this writing another meeting of the wire association is in session at Toronto to consider further concessions from list prices.

For bright, annealed and galvanized iron and steel wire from Nos. 0 to 20, the Canadian list prices are now as follows per 100 pounds, free on cars at Montreal, Toronto and Hamilton:

Nos.	Bright.	Annealed.	Galvanized.
0 to 7.	\$2.60	\$2.65	\$3.25
8.	2.60	2.65	3.35
9.	2.65	2.70	3.50
10.	2.75	2.75	3.60
11.	2.85	2.85	3.65
12.	2.85	2.85	3.75
13.	3.00	3.10	3.90
14.	3.15	3.25	4.20
15.	3.35	3.45	4.80
16.	3.65	3.65	5.30
17.	3.80	4.00	5.50
18.	4.00	4.20	5.70
19.	4.25	4.45	6.00
20.	4.45	4.65	...

The discount is 20 per cent. The price of Canadian two-point or four-point galvanized barb wire is \$4 per 100 pounds, delivered to purchasers, at 60 days, or 2 per cent. off for cash. This quotation is about equal to the Pittsburgh price plus duty and freight, the American quotation being \$2.15, the duty \$1.50, which, with the freight, would make the price in Toronto or

Montreal about \$3.90, to which the cost of freight to purchasers would have to be added. The price of barb wire in the early part of 1893, at Winnipeg, was \$5 per 100 pounds. In April of that year two wholesale hardware firms in that city began manufacturing barb wire and the price there is now about the same as at points eastward.

Wrought iron pipe and tubing form

another important item of Canada's imports, \$560,000 worth having been imported in the fiscal year 1892. In these articles, as in wire, the American exporter has to meet Canadian, as well as European competition, yet the United States furnished, in value, over half the importations of pipe by Canada in the year mentioned. The different varieties of tubes and pipes, and whence obtained, are shown in the following table, compiled from the official report, but which is subject to the same criticism with regard to the quantities credited to Germany as the statement concerning wire.

The single Canadian establishment which makes wrought iron pipe is situated in Montreal and manufactures only the smaller sizes up to 2 inches in diameter; consequently there is a revenue duty of only 15 per cent. on the larger sizes. It is not feasible to obtain an accurate statement in tons of the consumption of pipe of all sizes in Canada, as part of the quantity imported is reported to the customs authorities by weight and the remainder by measure, but, roughly estimating the weight by the general sizes of the measured pipe brought in, it is probable that the

man, Scotch, American and Canadian wrought iron pipe for general use up to 2 inches in diameter. The duty on these sizes is $\frac{1}{10}$ cent per pound and 30 per cent. ad valorem. Both the American and European makers quote prices freight paid to Montreal and duty is consequently assessed at the Montreal price:

Sizes.	In bond.		Duty on cheapest.	Cheapest foreign pipe duty paid.	Canadian pipe.
	German and Scotch pipe.	American pipe.			
$\frac{1}{4}$ inch.....	\$0.92	\$1.05	\$0.53	\$1.45	\$1.80
$\frac{3}{8}$ inch.....	1.10	1.18	.67	1.77	2.10
$\frac{1}{2}$ inch.....	1.58	1.58	.98	2.54	2.55
$\frac{3}{4}$ inch.....	2.20	1.97	1.26	3.23	3.51
1 inch.....	3.12	2.90	1.87	4.77	4.97
$1\frac{1}{4}$ inch.....	4.40	3.81	2.49	6.30	6.79
$1\frac{1}{2}$ inch.....	5.52	4.85	3.07	7.92	8.19
2 inch.....	7.72	6.19	4.20	10.89	11.32

The prices in every case are based on the best discounts for large orders. It will be observed that the European

Trade in the Indiana Gas Belt.

In the Indiana gas belt there is now a better feeling prevailing in trade circles, and the number of idle workmen has been reduced to a minimum. At Anderson the rod mill and wire nail works are making full time. The Woolley Machine Company are busy and have secured contracts for placing machinery in repair that was damaged by fire at the Irondale mill. The Irondale Steel & Iron Company have moved the salvage from the old site, part has been sent to machine shops and other material to Middletown, where the new mills are being erected. The Pittsburgh Bridge Company have been awarded the contract for steel buildings, one being 100 x 160 feet, with sheds 32 feet deep. The Middletown Land Company, with whom the Irondale people made their contract for a bonus of \$40,000, have platted a large tract of land and a lively sale of lots has resulted. Work has been commenced upon the rolling mill under supervision of T. B. May, superintendent, and Peter Guesen, engineer. It is expected that eight double puddling furnaces, the muck and sheet bar mill, also two, probably three sheet mills, will be in operation by July 1. The knife bar works and bolt works at Anderson are also in operation.

At Alexandria there is not such a lively air. The rolling mill that was moved from New Albany is in an unfinished state. In this mill an innovation was noticed in the arrangement of sheet mills. Upon one train of rolls there are four finishing mills. One pair of sand rolls are placed in the middle, making five stands of rolls operated from one side of the engine. The pair furnaces are placed back of the pack heating furnaces. There is room for a great deal of guessing among mill managers as to the probable result of such an arrangement.

There is a good deal of satisfaction felt at Gas City over the starting of the tin mills, and the success of the town and its enterprises seems assured.

At Muncie the Midland Steel Company, manufacturers of black and galvanized sheets, are reported as making little more than half time. The White River Bar Mills are being operated, and there is some work going on at the Muncie Muck Bar Company's works (formerly the Darnell mill). Orders for muck bars are scarce, and a steady run is not by any means certain.

Taking one consideration with another, the industries of the Indiana gas belt are in good condition. There are numerous attempts to boom localities, and land schemes are plentiful, but legitimate enterprise has been displayed to a remarkable extent considering the dull times of last year, and the schemes of schemers are not meeting with their former success. General reports confirm what was stated in *The Iron Age* some months ago, viz.: that the supply of natural gas is ample for all requirements and there are no signs of a diminution.

There are at present under construction in British shipyards (warships excluded) 333 vessels with an aggregate tonnage of 641,981. Of these 269 are steamers and 64 are sailing ships.

Negotiations are pending for the erection of a large agricultural implement factory at Houston, Texas. Houston and Galveston capitalists are interested.

Description of pipe.	Duty.	Country.	Number of feet.	Value.
Boiler tubes of wrought iron or steel.	15 per cent.....	Great Britain.	659,154	\$69,056
Boiler tubes of wrought iron or steel.	15 per cent.....	Belgium.....	12,889	1,313
Boiler tubes of wrought iron or steel.	15 per cent.....	Germany.....	403,803	32,652
Boiler tubes of wrought iron or steel.	15 per cent.....	United States.	370,031	43,748
Lap welded iron tubing, $\frac{1}{4}$ to 2 inches in diameter, exclusively for artesian wells, petroleum pipe lines and refineries.....	20 per cent.....	Great Britain.	136,106	8,430
Lap welded iron tubing, $\frac{1}{4}$ to 2 inches in diameter, exclusively for artesian wells, petroleum pipe lines and refineries.....	20 per cent.....	Germany.....	20,026	1,311
Lap welded iron tubing, $\frac{1}{4}$ to 2 inches in diameter, exclusively for artesian wells, petroleum pipe lines and refineries.....	20 per cent.....	United States.	475,271	35,703
Tubes not welded, nor more than $1\frac{1}{2}$ inches in diameter, of rolled steel, for bedsteads.....	Free.....	Great Britain.	4,576	724
Tubes not welded, nor more than $1\frac{1}{2}$ inches in diameter, of rolled steel, for bedsteads.....	Free.....	United States.	45,526	5,480
Wrought iron tubing over 2 inches in diameter.....	15 per cent.....	Great Britain.	335,365	40,524
Wrought iron tubing over 2 inches in diameter.....	15 per cent.....	Belgium.....	1,000	231
Wrought iron tubing over 2 inches in diameter.....	15 per cent.....	Germany.....	34,634	4,303
Wrought iron tubing over 2 inches in diameter.....	15 per cent.....	United States.	750,311 Hundred-weight.	164,499
Wrought iron tubes, n.e.s.....	6-10 cent per pound and 30 per cent....	Great Britain.	11,625	34,364
Wrought iron tubes, n.e.s.....	6-10 cent per pound and 30 per cent....	Belgium.....	2,185	7,037
Wrought iron tubes, n.e.s.....	6-10 cent per pound and 30 per cent....	Germany.....	15,225	42,806
Wrought iron tubes, n.e.s.....	6-10 cent per pound and 30 per cent....	United States.	22,957	68,135

Canadian mill furnishes about one fourth of the total tonnage used in the Dominion in a year.

The product of the American pipe maker in general has a good reputation in Canada, while the goods of only one or two Scotch and German firms have a better standing through, perhaps, better acquaintance. If prices, then, be equal, the securing of an order depends on the partiality of the dealer or consumer for the make of pipe with which he is most familiar. A Montreal importer, whose dealings in pipe have been confined to Scotch and German houses, recently asked a quotation from a Western Pennsylvania tube company on a large order of pipe. The price named was about the same as the German quotation, but as the dealer was thoroughly acquainted with the German product the order went to the Teuton. The following table presents a comparison of the present wholesale net quotations per 100 feet laid down at Montreal of Ger-

quotations are lowest for the three smaller sizes and the American for all the other diameters, while the Canadian rates are a little above the cheapest for every size. To the foreign pipe, however, there would have to be added the cost of cartage to and from warehouse. It would, appear, therefore, that the Canadian takes full advantage of the duty in figuring out his lowest prices, or, as protectionists, shall we say that he is in need of all the protection afforded him against his aggressive foreign competitors? In either case there remains a large and growing market for pipe in Canada for both domestic and foreign manufacturers, particularly in Ontario for the American. The use of wrought iron pipe in dwelling houses in Canada is probably proportionately larger than in any other country, arising from climatic conditions and the fact that hot water heating apparatus instead of hot air is the rule in the erection of new houses.

San Francisco News.

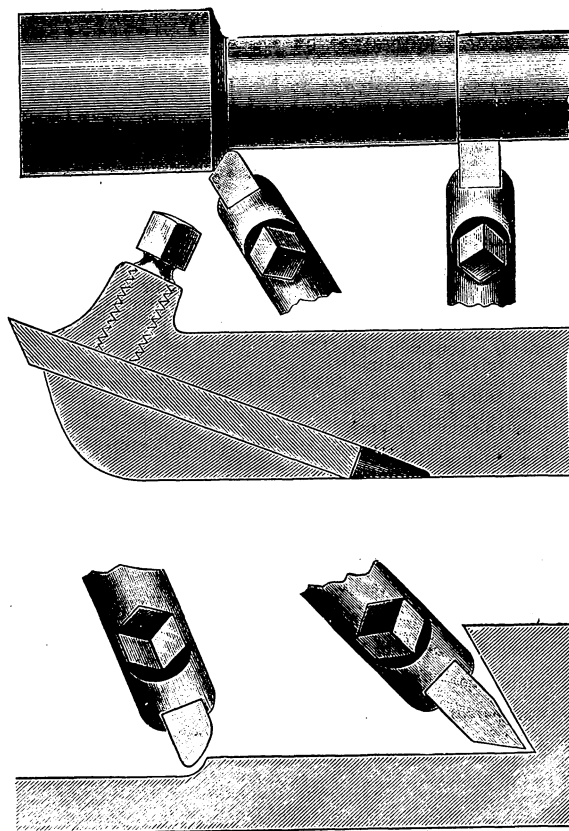
We have at length full reports of the imports of hardware, iron and metals coming to this city by the Central and Southern Pacific railroads, and although they do not show as great a falling off in imports by rail for the year as had been anticipated, and in some instances surprise those who had expected a very different result, yet they unmistakably show a falling off in the patronage of the roads in this respect, at least for the year of grace 1893. This proves that the work of the North American Steamship Company, though carried on during part of the time with great difficulty and amidst much discouragement, did have a tangible effect. Its effect in the cutting of rates is already sufficiently familiar to your readers. This had the effect of bringing back to them a considerable portion of the carrying trade that they otherwise would have lost—turned the tide, as it were. The figures here given show a loss of tonnage that is not wholly the result of the competition. Part of it must be placed to the credit of the hard times that lessened the amount of the State's purchases in the markets of the East. This, of course, worked detrimentally to the Steamship Company too. The range has been very great, the loss in large articles varying as much as from 11 per cent in hardware of various descriptions to about 18 per cent. in agricultural implements. The following table gives the imports by rail for 1893 in sufficient detail:

	Pounds.
Agricultural implements.....	12,982,040
Axes.....	217,640
Axles.....	306,700
Chain and cable.....	838,540
Cutlery.....	175,310
Engines.....	356,220
Firearms.....	177,670
Hardware.....	8,096,600
Iron, pig and scrap.....	260,560
Iron pipe.....	25,035,100
Iron, bar, bundle, &c.....	25,817,000
Machinery.....	12,956,040
Nails.....	7,869,140
Railroad material.....	8,516,910
Scales and beams.....	356,860
Shovels and spades.....	664,190
Springs.....	268,970
Steel.....	4,619,340
Tin plate.....	411,380
Tools.....	314,310
Wire and wire goods.....	11,768,120

Here, besides what we have already noted, we have a total of 66,000 tons, which can be valued roughly at, say, \$8,000,000. Here we have a great falling off in the matter of engines, and an increase in horseshoes—a very large one. The importation of iron pipe increased about fourfold; that of pig and scrap fell off to about 5 per cent. of what it was in 1892; that of bar and bundle iron increased somewhat; there was a falling of about 25 per cent. in the receipts of machinery; there was a great increase in nails, a falling off of about two-thirds in the importation of railroad material; a falling off of 40 per cent. in the imports of steel by rail, and a decrease in that of wire. On the whole the exhibit is an interesting one, as it shows unexpected gains, though losses were fully expected. What the forthcoming or rather the present year will show it is hard to say. Railroad imports up to date have been very light, while imports by clipper and steamer have been only moderate. The low rail rates will, of course, serve to keep old railroad shippers in line, except where they have to compete with tariffs that would restrict their market to the neighborhood of San Francisco. There the clipper or steamer will be naturally preferred.

The Armstrong Tool Holder.

This holder is drop forged of steel and is case hardened. The top and bottom are planed square with the sides. The hole for receiving the cutters is drilled and squared from the solid, insuring a straight and true seat. The set screw is tool steel, with tempered point. The cutters are made of a special self hardening steel, and the points are ground to shape. It will be observed that the points can be ground to any desired shape or clearance. The tool can be worked either right or left hand, and as there are no side projections it can be used close into a corner. There is no slip to the cutter; it is supported directly under the strain of the cut and will do as heavy work as a forged tool of the same size. These holders are



THE ARMSTRONG TOOL HOLDER.

made by the Armstrong Bros. Tool Company of 78 Edgewood avenue, Chicago, in sizes from 5 to 10 inches in length for cutters from $\frac{3}{16}$ to $\frac{1}{2}$ inch square.

Trade Publications.

TINIUS OLSEN & Co. of 500 North Twelfth street, Philadelphia, have issued a new edition of their catalogue of Testing Machinery. The book contains 43 pages and a large number of illustrations. Among the machines shown in the book are the little giant testing machine, Olsen's wire and band iron testing machine, tensile testing machine for light tensile tests, spring testing machines, transverse testing machines, chain testing machines, torsion testing machine, cement testing machine, duplex micrometer measuring instrument, automatic and autographic testing machines, Olsen's new testing machine for testing full-sized structural specimens of 200,000, 300,000 or 400,000 pounds capacity, and a number of instruments and special tools. The book is $10\frac{1}{2} \times 8\frac{1}{2}$ in size, is printed on a

good quality of heavy paper and is bound in stiff paper covers, with gilt lettering. Many of the cuts have required extension leaves to accommodate them.

THE CHICAGO ARCHITECTURAL IRON WORKS, Oakley avenue and Kinzie street, Chicago, have issued an exceedingly fine publication containing designs and illustrations, intended to convey some idea of the class of metal work which they manufacture. Illustrations are first given of numerous office buildings; for which the company have furnished the interior iron work. Then follow designs of entrances, with stair rails, grilles, overhanging canopies and artistic lamps. After these are ornamental gratings for windows, newel posts and hand rails, balcony brackets, gratings for deposit vaults, desk railings, garden and lawn vases, elevator car inclosures, ornamental lamp heads, andirons, gates, a great variety of designs of mesh work for grilles, &c. The company are manufacturers of plain and ornamental cast and wrought iron, brass, bronze and aluminum, electro plating, Bower-Barffing

and galvano-plastic work. Their works are now of great magnitude and thoroughly equipped with modern improved machinery and the latest devices for producing work of the highest grade. They have furnished the interior ornamental work for a large number of the finest office buildings and depots in Chicago.

THE CAMBRIDGE ROOFING COMPANY Cambridge, Ohio, have just issued their 1894 catalogue, describing their line of iron and steel roofing, corrugated iron and general sheet metal supplies for building purposes. Attention is drawn to the enlargement of their plant and additional facilities for quickly executing contracts. The company are now prepared to furnish black and galvanized sheets, tin andterne plates and other supplies in connection with a large variety of styles in roofing.

"ALUMINUM" is the title of a neat and instructive pamphlet issued by the Pittsburgh Reduction Company of Pittsburgh. It presents in condensed form the properties of that attractive metal and furnishes advice as to the best methods for those who propose to work and use it. A series of handy tables of weights, gauges, &c., completes the pamphlet.

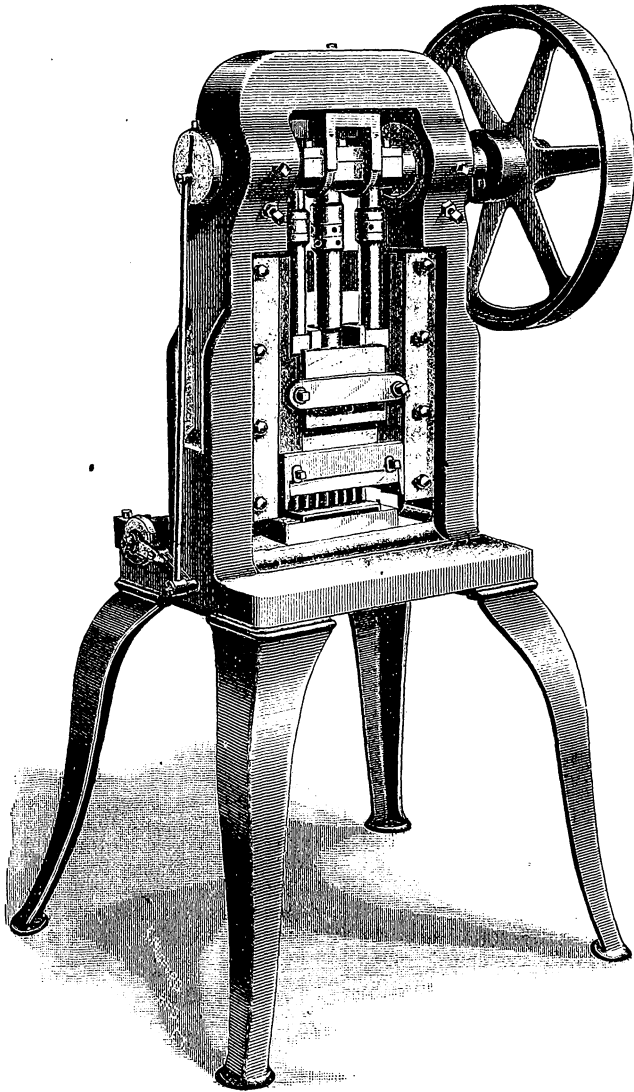
Double Action Gang Power Press.

This press has a roll feed attachment, which is stated by the makers—the Cross & Speirs Machine Company of Waterbury, Conn.—to be accurate in its movements. The shaft is of steel, with copper and tin boxes. The gate or slide is unusually long and is provided with large bearing surfaces; it runs in copper and tin ways, which may be set close without heating, thereby preventing the tools from shearing. The machine will cut and draw from 4 to 20 shells at every action of the slide, and it may be run at 230 revolutions per

was 467°, and temperature of feed 200°. As a result of the test the Falcon Tin Plate & Sheet Company gave the Adams Boiler Company of Cleveland an order for one boiler of 500 horsepower, to be equipped with mechanical stokers.

O. W. Potter.

The many friends of O. W. Potter of Chicago will be pleased to learn that although he has been seriously ill for some time he is now recovering. The following appreciative sketch of Mr.



DOUBLE ACTION GANG POWER PRESS.

minute. Two sizes of this press are built, one weighing 1400 pounds and the other 2000 pounds.

A test has been made by D. Ashworth of Pittsburgh on three Adams upright water tube boilers of 225 horse-power each at the works of the Falcon Tin Plate & Sheet Company. The boilers have been in constant use for 11 months, and were tested just as they were running the mill, not being forced. The test lasted seven hours. The horse-power developed from 212° F. was 947; the amount of water evaporated from 1 pound combustible from 213° was 9.74 pounds. The fuel was low grade bituminous slack, hand fired. The quantity of moisture in steam was 0.6 per cent. The temperature of waste gases

Potter is taken from a recent issue of the *Chicago Evening Post*:

Orrin W. Potter is to the West what Andrew Carnegie is to the East. To his management the immense iron and rolling mill interests of Chicago owe their largest measure of success. Mr. Potter's knowledge of the iron industry is complete—an industry of whose details he is as fine a master as any of the great men who have earned wealth and fame on this or on the other side of the Atlantic. It may be urged that his great success was chiefly due to the fact that he came West early and that the iron industry grew up with him. Of course, this is true, but there is no one who will not admit that the Illinois Steel Company, one of the richest corporations in the country, is, in the

main, the work of the genius he has in this line of business. Mr. Potter is a type of the ideal rich merchant and manufacturer. He began life in the humblest station. He was born at Rochester, N. Y., in 1836. His father was a farmer, and Orrin W. received his education in the common schools of the county. His tastes did not incline to a study of the humanities, even had he the opportunity, but he early manifested a great liking for civil engineering. When 15 years old he joined a surveying party, with which he went through the State of New York and into Canada. But at the time the great West was waxing strong and new towns and railroads were being mapped out. Young Potter came West with the tide and settled in the town of Wyandotte, Mich., where he entered, as clerk, the employ of Captain E. B. Ward, the proprietor of a rolling mill. It was here that he first learned the intricate details of the trade that was to make his millions in after life. This was in 1856, and the year following Captain Ward made him bookkeeper and paymaster of his works in Chicago. When the Chicago Rolling Mill Company were organized in 1864 Mr. Potter was appointed secretary and general manager. At this time he was only 28 years old. He was careful, conscientious, hard working, attentive to business, and when Captain Clement retired from the presidency of the company in 1871 Mr. Potter was elected to be his successor. At that time Chicago lay in ashes after the great fire. Under his judicious and far-seeing management the company were carried over the several financial and industrial depressions that have contracted business and capital since that time. After this he was made president of the North Chicago Rolling Mills. When this company were consolidated with the Union Steel Company and the Joliet Steel Company, forming together the Illinois Steel Company, he was elected chairman of the new confederation. This connection he severed in 1890. When First Vice-President Field of the Commercial National Bank died, Mr. Potter took his place—a place which he at present occupies. He is treasurer of the Inter Ocean Transportation Company of Milwaukee and a director of the Milwaukee Metropolitan Iron & Land Company. He is a member of the Chicago Club, has been president of the Commercial Club, is a charter member of the Union League Club and was at one time manager of the Young Men's Christian Association. He was a member of the Board of Counselors of the Chicago Homœopathic College for eight years and a director of the Chicago Relief and Aid Society. He is interested in the Commercial National Bank, the First National Bank and the Illinois Trust and Savings Bank. His wealth is estimated by the millions. Mr. Potter's new house on the Lake Shore drive is one of the handsomest bits of architecture in the West. In 1858 he was married to Miss Ellen Owen, daughter of Benjamin F. Owen, of Newport, Mich. The family consists of one son, Edward C. Potter, and three daughters. Mr. Potter has been conspicuous in charitable enterprises, and when in the iron trade he was considered a sound friend by the labor organizations whose members he employed.

The lockout of the Cleveland, Ohio, foundrymen against the union molders has been broken, and all the men returned to work with the minimum union wages in force.

THE WEEK.

The Michigan Labor Bureau has made a thorough canvass of the present condition of labor in that State as compared with one year ago. During the period between September 1 and February 1, a total of 2066 factories and mills in all parts of the State were inspected. Of these, 377, comprising some of the most important, were entirely idle. Of those reported in operation, 1117 were running full time and 573 on short time, the latter showing a loss to labor of 82,627 hours per week. The number of workers laid off is 48,725, or about 43 per cent. of the whole. There has been an average reduction of wages in factories visited of 9.5 per cent.

The gratifying fact is noted by Dun's agency that the amount of failures in the United States during February was only \$15,000,000, as against \$30,946,000 in January, a decrease of more than 50 per cent.

British Board of Trade returns for the month of February show an improvement in both imports and exports as compared with the corresponding month last year. The exports increased \$2,832,000 and the imports \$20,256,000.

A bill to extend the limits of the port of New York so as to include Yonkers, Westchester County, has been favorably reported by the House Committee on Commerce.

The Panama Canal is again becoming a topic of interest in the French capital. Although nothing definite has been settled it is believed that a new company have been formed for carrying on the work. M. Bartissol, a famous contractor, and M. Eiffel are said to be the moving spirits of the undertaking.

A recent order of the Treasury Department, permitting the unloading of vessels before entry, is much appreciated by importers, as saving a delay which is frequently costly and inconvenient.

The California State Labor Congress has adopted a platform, including "the collective ownership by the people of all means of production and distribution," and has agreed not to support any political party that does not agree with it.

Edison has perfected his latest invention, the kinesiograph, an instrument by which a series of pictures can be rapidly taken of a person or object in motion, in what is practically a single picture. He has taken some perfect plates with this apparatus, which promises to mark a new era in photography.

A comparative summary of the exports and imports of merchandise during the seven months ending January 31, 1893 and 1894, recently published, shows that imports into the United States fell off during the latter half of last year to the extent of \$112,822,621, as compared with the period ending January 31, 1893, while exports increased by \$41,264,227. The figures are:

Imports.	
Seven months ending January 31, 1893.....	\$184,371,681
Seven months ending January 31, 1894.....	371,549,060
Exports.	
Seven months ending January 31, 1893.....	\$519,031,818
Seven months ending January 31, 1894.....	560,295,545

The lumber firms of Minneapolis have decided to consolidate, and, it is stated, have consummated a large deal of pine timber on the Upper Mississippi, comprising some 1,500,000,000 feet of timber.

The question of the disposal of the schoolship St. Mary's, hitherto maintained by the City of New York, is again under consideration. The various chambers of Commerce and Boards of Trade throughout the State are in favor of transferring the training vessel to the State authorities, and resolutions to this effect have been largely adopted.

The Johnston Steamship Company of Liverpool have completed arrangements for the establishment of a line of whaleback steamers, to run between Baltimore and Tampico, Mexico, in connection with the Baltimore & Ohio Railroad. The service, which is to commence on April 18, will prove of great importance to Chicago, Pittsburgh, Cincinnati, Columbus, and the coal and coke regions of Pennsylvania, Maryland and West Virginia.

Last week's real estate transactions in New York City materially exceeded in number and importance the dealings for the corresponding week of 1893, which was considered a very satisfactory one. Real estate men generally entertain hopeful views in regard to spring business. There is just now plenty of money seeking profitable investment, and there are indications that a considerable amount of it may flow in this channel.

The House Committee on Judiciary have reported favorably on a bill introduced by Representative Turner of Georgia providing that a receiver or manager of any property, appointed by any court of the United States, may be sued in respect of any transaction of his in carrying on the business, without previous leave of the court, exactly in the same manner as process would be served on the corporation if it were not in the hands of a receiver.

The Indian Government proposes to meet its revenue deficit by a general 5 per cent. duty on imports, including silver, and by doubling the present duty on petroleum.

Advices from Albany state that the State Railroad Commissioners' office there is being flooded with applications from motor inventors to have their schemes tested, in view of the \$50,000 offer of the Metropolitan Traction Company of New York. The company are endeavoring to get the Railroad Commission appointed by the Legislature to act as a judge in determining the most practical electric or other power for street railroads, and awarding the large prize offered. Over 260 claims are now in. New York City is said to be furnishing more of the inventions than any other, but they have been received from all the States in the Union, as well as from England, France, Italy, Germany and Canada.

So many fishing vessels have been lost this winter that the Gloucester, Mass., builders are crowded with orders for new craft. Their yards will be kept very busy for several months.

A plan has been submitted by the engineers of the Brooklyn elevated railroads for a superstructure to be built over the existing railroad on the Brooklyn Bridge, in order to allow the elevated trains to run directly into New York. Mr. Roebling, who was one of the builders of the bridge, declares em-

phatically, however, that the added structure would impair its safety and has reported unfavorably on the scheme to the bridge trustees.

It is stated that the new ship-building programme of the British Government will consist of the construction of eight first class battle ships of the type of the "Majestic," at a total cost of \$33,600,000.

An Ohio crank, Coxey by name, announces that he will lead an army of 10,000 unemployed Americans to Washington about May 1, to demand legislation for the relief of the people.

By the deepening and widening of the Eel River for a distance of 20 miles, several thousands of acres of low swamp lands in Indiana, now worthless, are to be reclaimed.

Advices from the East state that Japanese coal is attaining some considerable success. A recent shipment to Bombay, India, was found very satisfactory, as its cost is nearly 50 per cent. less than that of Welsh coal landed at that port, while the consumption is only 8.50 per cent. higher.

The steady growth of the anthracite coal tonnage of Pennsylvania is shown by the *Coal Trade Journal* for the past seven years as follows:

1887.....	34,641,017	1891.....	40,448,336
1888.....	38,145,718	1892.....	41,893,320
1889.....	35,407,710	1893.....	43,089,536
1890.....	33,865,174		

The same authority places the total production of coal in the United States during the last year at 166,133,062 tons, a gain of more than 12,000,000 tons over the previous year. Of this amount only about 3,600,000 tons was exported, mainly to Canada and Mexico.

Eastern business from Cincinnati is to be pooled between the Pennsylvania, Baltimore & Ohio, Southwestern and "Big Four" railroads.

February's fire loss in the United States keeps up the large average of recent months, being \$11,300,000, as compared with \$10,000,000 for February, 1893. These continued heavy fire losses are beginning to bear hardly on the insurance companies. The *Journal of Commerce* says that 1894 threatens to be remarkable for its fire insurance failures.

The total number of immigrants arriving at New York, Philadelphia, Baltimore and Boston during 1893 was 431,712. These comprise four-fifths of all the arrivals at American ports.

A striking illustration of the depreciation that has taken place in the value of industrial securities during the past year is reported from Lowell, Mass. A calculation of the present selling value of the stocks of the leading manufacturing companies in that city shows that they have lost in the aggregate fully \$3,000,000, as compared with a year ago.

New York City's foreign commerce account for the month of February, according to official returns, shows a decrease of over \$25,000,000, as compared with February, 1893. This decrease is partly accounted for by the light amount of specie sent abroad, the exports being nearly \$10,000,000 below those of the corresponding month of last year. Apart from this the exports of merchandise show an increase of \$4,625,000, and the imports a falling off of nearly \$15,000,000. The imports exceeded the exports by \$4,782,600.

The Iron Age

New York, Thursday, March 15, 1894.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - BUSINESS MANAGER.

Foundry Chemistry.

Much good is sure to come from the active discussion which has been going on for some time in the two large foundrymen's associations on the question of the value of the chemist's work to the founder. We are so thoroughly convinced that scientific research and study will tell ultimately on the balance sheet of the founder and will redound to the benefit of the buyer of castings that we cheerfully surrender a good deal of space to the subject. After the smoke of the friendly battle now being waged has cleared away, it will probably be found that the contestants have come nearer to occupying common ground. It seems to us that one phase of the subject has been neglected thus far by both parties to the controversy. Both the chemist and the physicist, if we may so term the devotee to physical tests, stop at the moment when the iron goes into the ladle. The one relies upon the chemical analysis to give him certainty as to quality of product. The other casts test pieces of standard size, watches and records the results and hopes to obtain from them indications as to the best selection of materials. There are many cases, undoubtedly, in which each of these methods yields satisfactory results. No better proof could be furnished for one than the experience of Mr. Whitney and Mr. Devlin as recited in the discussion which we print elsewhere. Mr. Keep's results, in the works of the Michigan Stove Company, confirm his attitude. And yet either, or both, might lead dangerously astray when applied to other conditions.

We believe that the conditions which prevail in the mold itself and the form of the casting have an influence which has been entirely overlooked thus far. A stove founder would use with admirable success a mixture which would be unsatisfactory to one who casts a heavy engine bed, or one who desires a casting easily tooled. Qualities brought out in a casting in which the mass of metal brings with it slow cooling would be utterly lost in a thin casting chilling almost immediately.

For the present, in what might be called the tentative stage of development, the greatest success from chemical work in the foundry may be expected in establishments where castings are made under fairly uniform conditions as to size, thickness and subsequent finishing work. While general principles may guide in it, the

nicer details, the attainment of maximum efficiency at minimum cost, must be worked out in every individual case.

The Building Outlook.

One of the most cheerful prospects in the trade situation is in the direction of building operations. Seldom has the future looked brighter for those in the building trades than at this time. There were indications of this sometime since, when architects' offices were reported to be again filling up with work. But what was then to some extent a matter of mere promise now seems actually nearing fulfillment. Building permits are being taken out in large numbers in the leading cities, and contracts are getting into the hands of builders. In the city of Chicago the records for the month of February show building permits granted for almost as great a frontage and nearly as high a total value as in February of last year. This is particularly significant from the fact that in the spring of 1893 building was very active in that city among those who were making preparations for the World's Fair. Few cities at that time were as busy in the building line as Chicago. If preparations for building there are now on a scale but little below that of last year, it augurs well for a very important branch of trade on which many other branches depend.

The character of the permits now being taken out in the cities shows quite a change. Fewer great structures are in prospect, but the great bulk of the buildings projected are houses of moderate size, good store buildings and a sprinkling of warehouses and factories. Builders will consequently be more generally employed by the greater number of separate contracts, and the ordinary mechanic is likely to find employment of a more steady character than when great structures are being rushed to completion as speedily as possible.

There has probably not been so favorable a season for making improvements of this character for 20 years. All kinds of materials are lower than ever before known in this country. Builders are anxious to obtain work, and, generally speaking, workingmen are even more anxious to get to work because many of them have had nothing to do for a long time and have either exhausted their resources or soon will do so if they do not speedily find employment.

As to the effect of an improvement in the building trade on the iron and steel business, there is reason for considerable hope in many respects. The consumption of iron and steel in heavy masses may not be so great as when so many large office buildings were being erected at about the same time, but no building can be put up without involving the use of iron and steel in some form. As "many a little makes a mickle," the aggregate business from this source is huge, and even if it can-

not, however active it may be, compensate for the dullness of business among the railroads, yet it is welcome as one of the influences which may assist in developing a little more light to dispel the gloom in which we have so long been struggling. It affords us pleasure to think that there is at least one line in which to chronicle an awakening.

Low Prices and Poor Quality.

It is now in order to hear complaints of quality from all classes of buyers and consumers. Many of these troubles, of course, arise from the captious spirit of a buyer who has bought for long delivery on a falling market. The soreness growing out of having made a bad bargain is often aggravated by sellers representing rival concerns, who, knowing that they have lost the business, maliciously quote very low prices, in order to make the relations of the buyer with the successful seller as uncomfortable as possible.

Still it must be acknowledged that it is often the manufacturer who is at fault. Prices have been forced so low on almost every character of manufactured product that skimping and adulteration are to be expected as a matter of course. When there is little or no profit in the production of an article on an honest basis, not only will less care be taken in the process, but inferior materials are likely to be used, and perhaps short weight or scanty measure will be risked in the chance of escaping detection. The apparently great bargains which are being offered on every side are not always bargains, but the buyer needs to employ keener wits than ever before in his experience to detect actual bargains from the host of dishonest productions seeking his favor. Matters have come to such a pass that time-honored terms, which once had all the force of a trade-mark, constituting a sort of commercial currency in business nomenclature, no longer mean anything so far as quality is concerned. Values have dropped too rapidly and profits have disappeared too completely for many manufacturers, and merchants as well, to adhere strictly to customs which were in vogue when times were good and a fair business venture secured a fair business reward.

No particular line need be singled out for censure in this regard. The poor wight who spends his last dollar for a pair of shoes "marked down from \$4," and finds the soles wearing out in a week, is not tricked any worse than the sturdy smith who thinks he has struck a wonderful bargain on bar iron and gets something that must be handled as tenderly as china. From clothing to sheet iron and from so-called jewelry to wire goods, evil practices have either crept or been forced into the factories and the result has been serious deterioration from accepted standards of quality. Wire

nails have been sold with less than 100 pounds in the keg, and made of unusually heavy wire to reduce the number of nails per keg still lower. Other goods of wire or round iron are made with varying gauges from the standard, thinner when sold by count, and thicker when sold by weight. Pig iron has been found to run very unevenly, and No. 2 foundry quite often presents characteristic features of No. 3. Boiler makers selling ridiculously cheap boilers seem to have suddenly found that tank steel possesses all the desirable qualities of safety ordinarily imputed to flange or fire box. And to help them along in this belief there is a suspicion that some plate manufacturers obligingly furnish steel branded as of the high grades at the low grade price.

A letter from a friend, who is one of the best informed men in the machinery trade, suggests a topic of interest to all manufacturers and the consumers of goods which covers one phase of the subject under discussion. He asks: "Can you suggest an explanation of that crank in human nature that impels employees to 'shut up the eye' of inspectors of manufactures of the establishment where they are employed? The deception proceeds, entirely irrespective of any personal pecuniary interest of the employee in the matter." An instance is cited of ingot molds, where the cleaners were under most positive orders to report the least internal defect to the foreman; yet not only was this order systematically disregarded, but, to shut off the shipping clerk's inspection, the molds were loaded on the car with ends close to each other to prevent insight into the interiors. Another is the disregard by packers in glass houses of the orders to pack no "seconds;" and many instances are cited going to show that this disposition is so common as almost to be universal. Our correspondent is frank enough to recite his own exploits in the way of "shutting up the inspector's eye" in his youthful days, and admits that he cannot quite understand now what led him to run the risk of dismissal from employment for no personal interest of his own. On this statement of facts it would seem that the general disposition to blame the manufacturer with fraud, whenever deception is discovered, may probably be entirely wrong, and that the manufacturer may, and most probably has, no knowledge of the matter. It suggests, too, that those in charge of manufacturing plants should take into account this tendency among employees, and should assure themselves that their good name is not placed in jeopardy by over zealous employees by causing frequent and unexpected inspection of product to be made. In times like these, when employment is secured with difficulty, employees are apt to resort to any means to cover up deficiencies whose frank acknowledgment might cost them their places.

It is evident, therefore, that, aside

from unfair complaints on the part of disappointed buyers, there are a multitude of causes leading to the delivery of goods below the standard. The pressure may come from the buyer who wants to deceive the consumer. In some instances it is the manufacturer himself who is seeking relief from unprofitable contracts in deterioration of quality, and finally it may be the "kink" in the character of the employee which leads him to fool the buyer whom he regards as the natural enemy of his employer.

Owing to the decline in quality in many branches, the great tumble in values is more apparent than real, as the actual decline falls short of the difference between past prices of reliable goods and the prices now seen on the bargain tables. The age of sham is upon us, and this is one of the shams and delusions.

It is quite curious that the same effect is visible to a great extent when prices are abnormally high. At such a time costs also are high, manufacturers and merchants cannot figure out a proportionate profit on the risks run in conducting business, and they resort to adulterations, scanty measures and cheapening processes which impair quality. The consumer suffers from either extreme in prices. His interests, therefore, seem to lie in the maintenance of values on a reasonable plane, with fair margins of profit for those who are endeavoring to supply his wants and gain the favor of his patronage. Existing influences must change decidedly, however, before such an ideal condition of affairs can be brought about. In the meantime it behooves all buyers to use the utmost circumspection in making purchases if they wish to get the worth of their money. They should not permit themselves to be deceived by glaring bargains, but inquire closely into all the circumstances and adopt every safeguard to insure an honest transaction. Fortunately there are still many manufacturers and merchants who value their reputation for integrity too much to stoop to questionable practices, who watch their product very closely, and who furnish precisely what they have agreed to deliver. But they are not conspicuous among the ranks of those who offer bargains. When they do thus appear, there is no doubt of the sincerity of the bargain thus offered.

A project is on foot for the establishment of a large car works at Seattle, Wash. D. H. Gilman is the promoter of the enterprise, which appears to depend for its hope of existence on the report of an expert who is to examine and report upon the iron ore and fuel supply of that locality for the satisfaction of eastern capitalists. They desire to erect a blast furnace and steel plant to furnish the car works with pig iron for castings and rolled shapes for the wrought work. The local authorities are sanguine of a favorable report on their natural resources. The probable capacity of the car works is put at 50 freight cars a day.

CORRESPONDENCE.

Chemistry in Foundry Practice.

To the Editor: From having for more than a year constantly used Keep's tests on the one hand and almost as constantly employed a chemist on the other to control a melt of about 50 tons a day, I feel that I appreciate the position of Mr. Keep and that of the chemist. Had I been able always to reconcile the physical results with the analysis, it would have been unnecessary to vary from absolute uniformity, for the system of iron storage and records of analyses and tests was as complete as it could be made. Had I used more of Mr. Keep's advice in regard to radical changes of mixtures I should have done better than I did, though, thanks to both chemist and Keep, things did not go badly. I agree with Mr. Keep that it is not necessary or advisable for a foundry, however large, to have a chemist. If a foundry were to install a chemist, from my experience with foundries, I fear the installation would be a poor one, and your tyro with a \$200 outfit would be worse than none. Sample envelopes filled by yourself under careful instruction from a good chemist put you in communication within 48 hours or less with him anywhere within 200 miles, and you should receive his report as to silicon on any one lot of iron at a cost of a few cents for postage, and, say, \$3 per determination. An arrangement of this kind is much more available, as well as cheaper, for a foundry than having its own chemist and laboratory.

The foundryman must learn by absolutely systematic and absolutely relative physical tests what he needs and use chemistry systematically, and as systematically his common sense. This last is the most important of all, and chemistry and physical tests are its handmaidens only. There is nothing so fatal to success in administering a cupola as the unintelligent, panicky suspicion that something is wrong, with its consequent trial changes, sometimes efficacious—oftener not. For instance, it should not have needed a chemist to tell the manufacturer of pumps to whom Mr. Bolland refers that a mine pump should be made of close iron. Common sense should tell him that and should also prescribe the remedy. There are much more serious problems in which common sense must say to chemistry and physical tests: "Give me the facts that I may draw my conclusions." E. H. MUMFORD.

NEW YORK, March 10, 1894.

Foundry Chemistry.

To the Editor: In Mr. Keep's reply to Dr. Molin, published in your issue of 8th inst., he presents some physical tests of test bars made by him, which he characterizes as satisfactory. Unfortunately, he has not given chemical analyses of the bars for general guidance. When Mr. Keep further says: "If chemical analyses will give the explanation for the physical properties of iron with this remarkable strength and low shrinkage, I would like to see it," he may be going beyond the issue from his view point, for, having secured in these bars the desired physical properties for certain uses, he can repeat them as long as similar chemical composition is closely approximated in bars of the same section poured at the same temperature. The same iron poured into bars of larger section would not, how-

ever, have the same tenacity relative to the section, for obvious reasons. The "why" is of little importance to the foundryman compared to the "how," and a thorough knowledge of the latter may in time lead to familiarity with the former.

In asking the chemists to formulate a chemical prescription for iron of such, or any possible physical character, he may ascertain that similar work, only of a more complicated character, has been thoroughly well done by turning to pages 408 to 410 of *The Iron Age* of 1st inst., where W. R. Webster presents the results of exhaustive research in the "Physics of Steel," which clearly demonstrate the accuracy attained in formulating physical characteristics from chemical composition in a metal having the widest range of physical character, according to the service required. Very much less research would be necessary to tabulate the physical character, of iron as accurately, but concerted effort in that direction is yet to be made, and when made will be in the face of much opposition that it might be well to withhold.

JNO. E. FRY.

5417 PENN AVENUE, Pittsburgh, Pa.,
March 9, 1893.

Steel Plate Rolling in Great Britain.

To the Editor: Referring to W. Muirhead's letter printed in *The Iron Age* February 15, permit me to state in reply: Mr. Muirhead in his paper before the Iron and Steel Institute treated the method of rolling steel plates from ingots direct as a failure and he proposed an intermediate process on the same heat which would obviate the difficulties and make it a success. In this country rolling steel plates direct from ingots was pronounced a success long before the experiments referred to in Scotland and to-day many important concerns operate their mills in that manner.

Mr. Muirhead did not specify sizes or weights of plates. In this country it is a common practice to roll ingots 5000 pounds and heavier direct into plates of long length and cut up into small sizes. It is done at the works of the Otis Steel Company, Cleveland. The Carbon Iron & Steel Company roll all their plates direct from the ingot. At the Carnegie mills both processes are used. Generally speaking, the proportion of plates rolled direct from the ingot in this country is about one-half and the rolls generally used are three-high. That the quality of the plates is good is proved by the success and reputation of the firms mentioned.

ROLLING MILL ENGINEER.

C. H. Tucker, Jr., New York agent for Wiley & Russell Mfg. Company, 114 Liberty street, has recently taken the agency of the Frictionless Metal Company, Richmond, Va. This metal is offered for bearings for high speed machinery, engines, dynamos, railways, steamships, iron, steel, cotton, paper and flour mills, &c. When melted, it is right to pour when it will just brown a wooden stick thrust into it. It is claimed that remelting does not deteriorate it, but overheating ruins the alloy.

The works of the Anniston Cordage Company of Anniston, Ala., are operated entirely by electricity derived from the plant of the electric railway. It has proved very satisfactory after six months' trial.

Washington News.

(From our Special Correspondent.)

WASHINGTON, D. C., March 13, 1894.

Tariff Matters.

Senator Aldrich, who has charge of the minority management of the tariff bill in the Committee on Finance, is conducting the opposition to the measure as framed by the majority on two lines. The most important is the effort to restore the specific principle in the levying of customs duties. The other relates to higher ad valorem rates if the specific principle is rejected. This it will be unless the majority very radically change their views.

The Senator, sustained by his colleagues of the committee, will also insist upon fixing a time for the hearing of representatives of staple industries. The Senator, in conversation with the correspondent of *The Iron Age*, said: "I can only speak for myself. Of course, the minority can accomplish nothing without the co operation of some portion of the majority. It remains to be seen whether there is a conservative element there which will accept at least some of the important amendments which will be submitted in the interests of American industry and wage workers."

Senator Aldrich calculates on about ten days' consideration in general committee. The consideration in the Senate, he says, will depend upon circumstances, "but," he added, "you can be sure that it will be thorough and exhaustive. The question is of too vital importance to every interest of prosperous occupation by the mass of our people and to the happiness and comfort of every home in the land to be permitted to pass by default."

The Senator said that it would be impossible to say when a vote might be reached, or whether one would be reached at all, as there are majority Senators who are not disposed to permit the measure as now proposed to pass the Senate at any time, soon or late. Notwithstanding the reckless statements sent out from here of the speedy passage of the bill, the people can be certain that such a result will not be reached without a cloture except with the consent of the minority.

Tests of Armor Plates.

The experimental nickel steel Harveyed, from the Carnegie Works, tested on Saturday, March 10, at Indian Head, did not come up to the expectations of the naval experts who were present. There were two of these nickel steel Harveyed plates, 8 x 6 feet and 10½ inches thick, sent to the Indian Head proving grounds, the purpose being to test the product of the new furnaces erected by the Carnegie Company for the application of the Harvey process. The experiments, therefore, had no immediate reference to the armor of any vessels now building. Only one of these plates was attacked on Saturday last, an 8-inch shot being used. The other will be subjected to the test of a 10-inch shot.

In the case of the plate tested a row of holes was bored across the upper left hand corner to a depth of 1½ inches. Another row of similar holes was bored a short distance to the right of the first and entirely across the plate. The first 8 inch shot was planted near the top and between the diagonal and vertical rows of holes. About one-third of the shot penetrated and welded, the outer portion being entirely broken off. The effect of this shot, fired at 1841 f. s.,

on the plate was a crack extending from the point of entrance of the shot to the left side of the plate. Strange as it may appear, the crack, instead of taking in one of the bored holes in its course, passed between two of them.

The second shot, also an 8-inch, fired at 2000 f. s., at the upper right hand corner and near the soft portion left to be cut out for the port for the gun, also welded and left two cracks, one extending upward to the top and the other from the shot to the left. The most noticeable effect of this shot was a crack, not previously discoverable, which developed at the place of impact of the first shot, and extending upward to the top of the plate. The trial of the second plate will be more severe.

The official report has not yet been received at the bureau. The information, however, of the result of this test is based upon expert authority, which was not wholly satisfied. The experimental test of the second plate is therefore awaited with much interest.

Johnson Shot.

The Ordnance Bureau of the Navy Department speaks in the highest praise of the performances of an experimental lot of 10 inch cast steel shot turned out by the Johnson establishment at Spuyten Duyvil. It is proposed also to make a trial of three 12-inch cast steel shot on the next plate. The bureau is evidently greatly pleased with this shot and propose to give it every chance for a most thorough trial of its merit. The Carpenter shot continues to hold the first rank, but the progress made in this branch of warlike material is shown in the increasing merits of other American productions in the same line.

The Carnegie Armor Plate Trouble.

It was said in official quarters to-day that the Carnegie complications concerning armor plates below standard having been delivered to the Government through irregularities charged have not ceased. It appears, however, that there is much information held between the Department and the Carnegie Company which is not known to the public, and will not be until certain matters are sifted to the bottom. The Congressional investigation is not likely to be made, at least at present, as the Department has better facilities for a searching inquiry. The number and history of every plate furnished by that company is a matter of record. In the Construction Bureau the location of every plate on the sides or deck of any and every vessel is known by the working drawings, which are always preserved. Therefore the Government Inspector's records of plates made, stamped and shipped from the place of production must correspond with the record of groups furnished for tests and with the record of delivery to the point of use in the construction of the vessel to which they belong. It is claimed that the widest range of collusion and falsification of records would be required in order to successfully carry out the scheme of fraud, and then it would be certain to be revealed. After all the data is obtained, it is proposed to make a thorough investigation of the vigilance of the inspecting officers. As these are officers of the U. S. Navy, they will come under a court of inquiry. If any negligence, not particularly in point of honesty but in the performance of duty, be discovered, the sentence will be carried to the extreme limit. The Department is greatly incensed. If necessary a severe example will be made of any officer found derelict in even the slightest degree.

MANUFACTURING.

Iron and Steel.

Reference has already been made in these columns to the fact that the Coleman-Shields Company, Niles, Ohio, manufacturers of pipe, casing and tube iron, had recently given mortgages to the amount of \$52,791.12 for the purpose of securing notes held by the grantees. We are advised that the mortgage was given to all of the creditors of the Coleman-Shields Company to better secure them on notes which they held of the American Tube & Iron Company, Middletown, Pa., and the Duquesne Tube Works Company of Pittsburgh. The Coleman-Shields Company placed paper of the above firms with all of their creditors, dollar for dollar, and obtained an extension of three years. The firm feel confident that this paper will all be paid prior to the expiration of the mortgage, and that they will not be called upon to meet the same.

During the week ending February 24 Rosena Furnace of the Oliver Iron & Steel Company, New Castle, Pa., made 1728 tons of Bessemer iron. This furnace is under the management of E. D. Reis, who has been using one-third ore mixture of South Side ore from the Oliver Mining Company's Mesabi mines, and the furnace is said to be making 260 tons of standard Bessemer iron daily. The best day's run during February was on the last day of the month, when 294 tons were turned out. The furnace is 18-foot bosh and 75 feet high.

The New Jersey Zinc & Iron Company, at Newark, N. J., have placed the order for the iron roofs on their new buildings with the Berlin Iron Bridge Company of East Berlin, Conn. The furnace room will be 50 feet wide and 400 feet long, made entirely of brick and iron. The engine room, fan room and boiler room will be 60 feet wide and 187 feet long, the engine room covered with slate and the fan room and boiler room covered with corrugated iron.

On the morning of the 8th inst. the offices of the Hollidaysburg Iron & Nail Company, Hollidaysburg, Pa., were destroyed by fire. The offices were the headquarters of the old Portage Railroad 40 years ago, and many valuable records and relics of this pioneer railroad were destroyed. The loss approximates \$15,000, nearly covered by insurance.

The puddling department of the plant of A. M. Byers & Co., at Pittsburgh, went on double turn last week. The old employees of this firm who at first refused to accept \$4 per ton for boiling have since returned to work and the non-union men have been discharged.

It is stated that a number of skilled employees at the Homestead Steel Works, Homestead, Pa., have resigned their positions at that plant and will go to Cleveland, Ohio, and enter the employ of the Cleveland Steel Company, of which concern John A. Potter is manager. It is further stated that there is considerable dissatisfaction over the wages paid in certain departments of the Homestead Steel Works, and that other skilled workmen are only waiting an opportunity to better their condition.

Clinton Furnace of the Clinton Iron & Steel Company, at Pittsburgh, which resumed operations on February 7 last, made 2930 tons of iron from that date up to March 1. Considering the size of the furnace, this is a very good record.

The Columbia Corrugating Mfg. Company, Niles, Ohio, manufacturers of all kinds of iron and steel roofing, have a factory at Niles measuring 60 x 200 feet, and one at Chicago 100 x 100 feet in size. The firm expect to add other items to their present line of work as fast as they can be reached. Their present equipment consists of machinery for the manufacture of roofing, corrugating iron, galvanized sheets, metal lathing, &c. This concern will at once apply for a charter of incorporation.

We are advised that the statement that Kirkpatrick & Co., Limited, of Pittsburgh, proprietors of the Leechburg Iron Works, at Leechburg, Pa., manufacturers of fine sheet iron and sheet steel, would engage in the manufacture of Russia patent planished sheet iron, is without foundation. What gave rise to the report is the fact that within a short time Joshua S. Ingalls & Co. of Troy, Ohio, manufacturers of Craig steel, will move their plant to Leechburg, adjacent to the plant of Kirkpatrick & Co., Limited. This removal will not neces-

sitate any additions or extensions to the present plant of Kirkpatrick & Co., Limited, as that concern have been furnishing steel to Joshua S. Ingalls & Co. for some years. Kirkpatrick & Co., Limited, also intend putting in two additional tin mills and changing their cold rolling plant, but nothing more than the above is contemplated at this time, and the firm are not considering any extensive changes or improvements in their present plant.

A well attended meeting of the creditors of James B. Scott & Co., tin plate manufacturers, and whose affairs were placed in the hands of James Collord, assignee, on February 13, was held in Pittsburgh on Tuesday afternoon, the 6th inst., at 3 p. m. It is understood that it was only a preliminary meeting and was for the purpose of giving the creditors a general idea of the condition of the affairs of the firm. A summary statement was presented, which showed that the liabilities of the firm would aggregate about \$200,000, while the assets were given as considerably less than this amount. The statement was referred to a committee of three of the creditors, who will examine the accounts closely and call another meeting of the creditors when the report is ready. It is likely that this meeting will be held next week, when it is probable a proposition will be made to the surviving members of the firm by the creditors for the payment of the indebtedness of the concern. It is also probable that an effort will be made by which the business of James B. Scott & Co. will be carried on by the surviving members of the firm.

The blast furnace of the Stewart Iron Company, Limited, Sharon, Pa., has been blown out for relining. It is expected this will require about six weeks to complete, and as soon as repairs have been finished this stack will resume operations again.

Mattie Furnace of the Girard Iron Company, Girard, Ohio, which has been banked down for several weeks, is expected to resume operations about the 15th inst.

The improvements under way for some time at the rolling mills of the Johnson Company, Johnstown, Pa., have been completed and operations were resumed on Monday, the 12th inst., when several hundred men returned to work. One of the most important improvements made in this plant was the extension of the hot bed, so that it will carry rails 90 or 120 feet long, instead of being limited to 60-foot rails, as formerly.

The Beaver Falls mills of the Carnegie Steel Company, Limited, Beaver Falls, Pa., were closed down last week. At this time it is not known when operations will be resumed at this plant. The product consists of wire and wire nails.

Sarah Furnace of the Kelly Nail & Iron Company, at Ironton, Ohio, was banked down last week.

It is stated that the stockholders of the Columbia Iron & Steel Company, Uniontown, Pa., are making arrangements looking to the starting up of that plant, which has been idle for more than a year.

Additional departments of the plant of the Reading Rolling Mill Company, at Reading, Pa., were put in operation last week. It is stated that prospects for the future are considerably brighter now than for some time past.

The Joliet Steel Rolling Mill Company of Joliet, Ill., have sold their property to Ohio capitalists, who intend to put the mill in operation at an early day.

At the annual meeting of the stockholders of the Lackawanna Iron & Steel Company, held at Scranton, Pa., on the 7th inst., the following directors were elected: Moses Taylor Payne, Samuel Sloan, S. S. Palmer and William E. Dodge, all of New York; Walter Scranton, East Orange, N. J.; John I. Blair, Blairstown, N. J., and William Connell, W. W. Scranton and James Blair of Scranton.

The plant and property of the Cherokee Iron Mfg. Company, at Rusk, Texas, have been sold at public auction to satisfy a judgment in favor of the Farmers' Loan & Trust Company of New York. The blast furnace plant, consisting of the Star and Crescent Furnace, 60 x 11, built in 1890-91, and its appurtenances, and 440 acres of ore lands, were purchased by Frank A. Daniels of New Orleans for \$32,250. The actual cost of the plant was \$137,000. It is not known what disposition will be made of it.

The Cambridge Iron & Steel Company, Cambridge, Ohio, are contemplating the erection of four black plate mills and a complete plant for the manufacture of tin

plates. The proposed plant is to be built upon land immediately adjoining the present works of that company, but will probably be operated by an independent company having a capital stock of \$300,000. A. Beyer, president of the company, has proposed to the town of Cambridge that the work shall be carried out, as soon as the tariff bill is settled definitely, in consideration of the sum of \$18,000 to be paid by the town to the company. If, however, the rate of duty on tin plates is less than 12-10 cents per pound, the project will not be carried out. It is stated, further, that an open hearth steel plant will follow the tin mills. Public meetings have been held and a recommendation sent to the town council to issue bonds to provide funds. The council appointed a committee to inquire into the legality of such a proceeding and the matter may not be definitely settled for a few weeks.

The blast furnace of the Passaic Zinc Company, at Jersey City, N. J., has been out of blast since July 1, 1893. Since then the old furnace has been torn down and a larger one has been built on an entirely new foundation, masonry being laid on piles driven in the meadows. The work of reconstruction is about winding up, and within a week or two the furnace is to go into blast, making spiegeleisen from zinc-residuum.

The Cleveland newspapers announce authoritatively that the much talked of new Johnson plant will be erected in the vicinity of that city. Congressman Tom L. Johnson is quoted as stating that a plant costing \$3,000,000 will be erected and will include four blast furnaces, a converting plant, a blooming mill, a standard T-rail mill, a street railway mill and a shape mill. Mills will also be erected for grider rails for street railways and for structural iron. The company will also erect their own coke ovens. This seems like a good deal of plant for \$3,000,000.

One of the furnaces of the Colorado Fuel & Iron Company, at South Pueblo, Col., is now in blast.

Bear Spring Furnace, in Stewart County, Tenn., which recently blew in after being abandoned for a number of years, is being operated under lease by White, Dixon & Co. We understand that the product, which is cold blast iron, is being shipped to Pittsburgh as rapidly as it is turned out.

Tropic Furnace, at Jackson, Ohio, has blown out.

The contract for the rebuilding of the Whitaker Mill, at Wheeling, W. Va., has been let, and it is expected that the mill will be in operation within the next three months.

Round Mountain Furnace, in Cherokee County, Ala., is ready to go into blast after two years' idleness.

The Portland, Maine, Rolling Mills have closed down on account of lack of orders.

The puddlers and helpers, to the number of 106, employed in the rolling mill of Morrison, Colwell & Page, at Cohoes, N. Y., refused to accept a reduction in wages, and the works were closed.

The Leechburg Foundry & Machine Company of Pittsburgh, Pa., have secured an order from the Aetna-Standard Iron & Steel Company, Bridgeport, Ohio, for the changing of two of the steel mills of the latter concern into tin mills. This includes a new outfit of rolls and also two 36 inch doubling shears with engine, two new cold rolling mills and one Mesta patent pickling machine with vats, cranes and everything complete. It is expected to have this work completed about May 1 next, at which time the Aetna-Standard Iron & Steel Company will be in position to furnish black sheets for tinning purposes. It is probable that within a short time after the above date the Aetna-Standard Iron & Steel Company will put in the necessary tinning machinery and will engage in the manufacture of tin andterne plate.

The Crescent Horse Shoe & Iron Company are adding a new puddling mill to their plant at Max Meadows, W. V.

Many furnaces of the Ohio Iron & Steel Company, at Lowellville, Ohio, closed down on the 10th inst. The company have on hand a large stock of the various grades of Mary Ohio Scotch iron, and when the present supply is exhausted its manufacture will be resumed, so that customers will continue to be promptly served.

The Fulton Foundry & Machine Works of 21 Furman street, Brooklyn, N. Y., have resumed operations in all their depart-

ments. They have long been noted for their fine machinery iron castings, tool and pattern making, die, press and interchangeable work.

Furnace H of the Edgar Thomson Steel Works, at Bessemer, Pa., which has been undergoing repairs and improvements for about two months, is expected to resume blast this week.

Machinery.

The Hudson Boiler & Cycle Company have been organized at Reading, Pa., for the purpose of engaging in the manufacture of boilers suitable for the burning of soft coal. The boiler is the invention of H. Maurer, who has been elected president of the new concern.

Wages at the Rome, N. Y., Brass & Copper Works have been cut 10 per cent., there being 275 hands employed by the company. For several months past the mills have been running on short time, an average of three days a week.

The Pittsburgh Engineering Company of Pittsburgh, builders of rolling mill machinery and engineering structures, have decided to open an Eastern office in the Havemeyer Building, New York.

The Frank-Kneeland Machine Company of Pittsburgh have recently furnished an 8-inch hoop mill to the J. Painter & Sons' Company, hoop iron manufacturers, of Pittsburgh. They have also ready for shipment to the same concern a 9-inch hoop mill, together with some special machinery for shearing barrel hoops.

The Lewis Foundry & Machine Company of Pittsburgh have been granted a charter of incorporation, with a capital stock of \$200,000. The incorporators are J. L. Lewis, John Davies, Henry C. Shaw and Wm. A. Herron, all of Pittsburgh. This new concern will succeed to the business of the Lewis Foundry & Machine Company, Limited, Pittsburgh.

A suit for foreclosure for \$340,000 and interest, also for the appointment of a receiver and for the sale of the reaper plant of Amos Whitely & Co., at Springfield, Ohio, has been filed in the courts by mortgage holders.

The Ludlow Valve Company of Troy, N. Y., shipped a valve of unusual size last week. It is for a 50-inch pipe and has been tested to withstand a pressure of 500 pounds to the square inch. It is the largest valve of that pressure ever made and the heaviest straightaway valve ever manufactured. It weighs in the neighborhood of 17 tons. At the works six other valves of the same size are being made, besides a large number of other valves smaller in size. All are to be used for the Pittsburgh, Pa., water system, and the total contract for valves amounts to about \$30,000. Each of the 50-inch valves requires about six weeks' time for manufacture. The Ludlow Valve Company are also to make a 50-inch check valve for Pittsburgh. This will be even larger, as it will weigh in the neighborhood of 23 tons. The valve will be tested to the same pressure and will be the largest of its kind ever made. The Ludlow Company shipped to Cuba about six months ago the largest globe valve ever made, and they now hold the distinction for having manufactured the largest valves of all kinds.

The Dixon Steam Engine Works of Newburg, N. Y., have made an assignment to William C. Chambers. All work on hand is nearly completed, and as soon as it has been turned out the affairs will be settled. The cause of the assignment was a demand from the estate of Gardiner Van Nostrand, who died in New York January 1 last, for \$50,000, which decedent had loaned Charles A. Dixon to use in carrying on the business. The liabilities aside from this are said to be small.

The Ferracute Machine Company of Bridgeton, N. J., manufacturers of presses and dies, report that there are many more inquiries recently and that their orders have gradually increased during the month of February, more orders having been received last week than in any previous week since last May. They have during the past year kept their pattern makers and designers at work, and have ready for the market a large number of new designs for presses and other sheet metal machinery. All of their older presses have been redesigned.

The Boore Mfg. Company of Buffalo, N. Y., who are placing on the market a new gas regulator invented by Lewis Boore, expect to have a plant and manufacture their burners in the near future. For the

present they are having the device manufactured under contract.

The Racine Iron Company of Racine, Wis., whose plant was destroyed by fire on February 25, have purchased a site, and will erect a two-story building 150 x 80 feet, to be completed at as early a day as possible.

The Manville Covering Company of Milwaukee, Wis., have laid the foundations of their new factory for the production of pipe and boiler coverings at the corner of Third and Clybourn streets. The building is to cover an area of 150 x 50 feet, and will be six stories high, with walls of solid brick. The growth of the company's business has been such as to demand greatly enlarged facilities.

The Clayton Air Compressor Works announce the removal of their offices and salesrooms from 43 Dey street to the Havemeyer Building, 26 Cortlandt street, New York. The company have operated their works in Brooklyn continuously on full time and with a full force, and while the volume of business does not equal that of former times they have enjoyed a fair trade throughout the recently prevailing hard times.

The Cady Mfg. Company of Cleveland, Ohio, makers of presses and dies and automatic wire cutting and straightening machines, are making some changes in their business with a view to beginning the manufacture of drop hammers, stamping presses, wire forming and special machinery on an extensive scale.

The Columbia Foundry & Machine Company of St. Joseph, Mo., capitalized at \$50,000, have been chartered. The incorporators are H. H. Smith, C. R. Lawrence and J. E. Trotter.

A consolidation has been effected of the interests of the McNeil Boiler Company of Akron, Ohio, and the Cook Boiler Company of Cleveland. In the future the Cook boilers will be manufactured at Akron.

The Practical Machine Company have been incorporated in New Jersey and will carry on business at East Bridgeton. The promoters have been connected with the Ferracute Works for a long time. They will do a general machinery business.

Work at the foundry of W. P. Ford & Co., Concord, N. H., which was suspended at the beginning of the year, has been resumed in all departments.

The machine shop of the Standard Oil Works, at Buffalo, N. Y., has been burned; loss, \$25,000.

The Goubert Mfg. Company, manufacturers of the Goubert feed water heater and Stratton steam separator, have removed from 32 Cortlandt street, New York, to 14-16 Church street, corner of Cortlandt.

The Brown & Sharpe Mfg. Company of Providence, R. I., who have been running short time for several months, will run ten hours hereafter.

The works of the Diamond Drill Company, at Birdsboro, Pa., have gone on full time.

Southard, Robertson & Co.'s foundry, at Peekskill, N. Y., has resumed operations after a suspension of several months.

The Detrick & Harvey Machine Company of Baltimore, Md., are running full time at their works. They have a good many orders for their open side planers on hand, and are receiving many inquiries in regard to their machines. Among recent shipments may be mentioned a 48 x 48 x 12 open side planer to the Tacony Iron & Metal Company, Tacony, Philadelphia, and another, 36 x 36 x 12, to the new works of the Penn Elevator Company, at Bloomsburg, Pa. The company are finding their present works rather inadequate for the growth of their business. They are getting into a line of heavy machinery and feel the need of better shipping facilities. They have recently purchased a convenient site at Bay View, in the suburbs of Baltimore, where shipping accommodations are available over the Pennsylvania and Baltimore & Ohio railroads. Plans are in course of preparation, and it is likely that building will be commenced about July.

The machine shop of P. Mashers, at Jamestown, N. Y., has been damaged \$5000 by fire.

Hardware.

Twelve new double-header machines will soon be added to the equipment of the New Castle Wire Nail Company, New Castle, Pa. This will increase the present capacity of the mill about 500 kegs per day.

Articles of incorporation have been filed organizing the Springer Automatic Threshing Company, Anderson, Ind. The paid-up capital stock is \$50,000. William M. Springer is president of the company and J. F. Springer treasurer. They will erect a factory in Anderson and employ 125 men in operating the plant.

The F. E. Boss Company of New York City have been organized for the manufacture of washers, weather strips, &c. The capital is \$10,000. The directors of the company are Frank E. Boss of New York, Samuel H. Kelly of Atlantic City, N. J., and Frank A. Moffitt of Brooklyn.

Clark & Cowles' factory, at Plainville, Conn., has commenced to run on full time.

The lamp department of Holmes, Booth & Haydens, Waterbury, Conn., is now running eight hours a day, five days a week. Until recently it has run only four days. In the main mill the employees are working six days, eight hours a day.

Hench & Dromgold, York, Pa., manufacturers of agricultural implements, advise us that they are very busy at present, and have been for the past four or five months. They have increased their payroll considerably. They have also added some new machines to their equipment, and are putting in more to keep up with their orders. They state that they have sufficient orders booked and in sight to keep them well engaged for the next four or five months. They report having a large export trade on threshers to Mexico and plows to Cuba and South America. Also a large domestic as well as foreign trade on circular saw mills.

Contracts have been let by the Arcade File Works of Anderson, Ind., for an addition to the company's plant, compelled by their growing business. A building 250 x 40 feet is to be erected, which will be of brick and stone, four stories high. At present 225 men are employed, but when the building now under way is completed the force will be increased to 450 or 500 men.

The National Outlery Company's new factory, at Rockford, Ill., is being rapidly pushed to completion. The heavy machinery is in place, and the first installment of the special machinery for grinding and polishing is erected. The latter is on an entirely new plan, patented by the officers of the company.

E. C. Stearns & Co., Syracuse, N. Y., advise us that their 1894 product is practically sold. They state that in consequence they have called their traveling men off the road, as they prefer to be in position to take good care of contracts already made rather than to oversell. They are working their full force of employees, and in several departments are running until 10 p.m. They regard the outlook for the bicycle business during the year as very bright.

Millbury Edge Tool Works, Charles Buck, proprietor, Millbury, Mass., have recently added to their plant three new buildings; a grinding shop, 75 x 30, warehouse, 60 x 30, and a boiler house, 15 x 24, and enlarged their forge shop, making it 90 x 30. A new 75 horse-power Corliss engine with boiler to match has also been put in. These improvements have more than doubled the capacity of their factory, and they announce that they are now prepared to supply the trade in any quantity promptly.

The barbed wire mill and rolling mill of the Washburn & Moen Mfg. Company, Worcester, Mass., have started on double time. The spring manufacturing department will run until 9 p.m. every day.

The factory of the Connecticut Valley Mfg. Company, Centerbrook, Conn., was almost entirely destroyed by fire on the 2d inst. Forty men were thrown out of employment. The loss is estimated at \$80,000, and the insurance at \$20,000. About \$15,000 worth of manufactured stock was saved.

Judge Wheeler of the Superior Court has granted permission for the release of receivership for Wallace & Sons of Ansonia, Conn., who failed last fall with liabilities of over a million. Half of the creditors, with claims of \$500,000, have accepted 60 per cent. cash, while the other half, with claims of about the same, will receive payment from the trustees. Robert M. Thompson and Henry E. Jacobs of New York and F. M. Webster of Boston were appointed trustees, and will take charge of the business and run it for the benefit of the credit-

ors of the second part, who are of the opinion that they will receive a larger part of their claims than 60 per cent.

The adjusters of the losses by the recent fire at the factory of the Colt's Patent Firearms Mfg. Company, Hartford, Conn., have awarded the company \$72,366.

The Lang Fence & Wire Works, St. Louis, Mo., have been incorporated, with a capital of \$2000.

Miscellaneous.

The Pottsville Bridge Company have completed the erection of the new iron building for the Whitaker Cement Company, near Easton, to replace the one recently, burned down. The building, which is 92 feet wide by 126 feet long, was erected in place in 20 working days from the time the contract was signed.

The following copy of the annual report of the Union Switch & Signal Company of Pittsburgh, for the year ending December 31, 1893, was submitted to the stockholders of that concern at the annual meeting, held in Pittsburgh on March 13:

Total sales.....\$1,227,629.51
Total disbursements..... 957,899.51

Net earnings above operating and other expenses..... \$269,730.00
Less interest on bonds, &c..... 71,820.80

Net profits..... \$197,909.20

The balance sheet shows available assets as follows: Cash in bank and in hands of agents, \$32,620.27; bills and accounts receivable, \$425,327.41; material on hand, \$167,333.55; total available assets, \$625,281.23. Unavailable assets: Real estate, at Swissvale, \$165,008.07; machinery and fixtures, \$126,082.96; hand tools, \$31,894.28; office fixtures, \$2431.01; suspense accounts, \$439.50; patents, \$1,392,986.59; total unavailable assets, \$1,718,842.41; total assets of all kinds, \$2,344,123.64. Liabilities: Preferred stock, \$396,600; common stock, \$997,950; first mortgage bonds, \$296,000; bills and accounts payable, \$176,013.83; interest on bonds accrued but not due, \$5480; total liabilities, \$1,872,043.83. Undivided profits, January 1, 1893, \$292,017.61; profits for year 1893, \$197,909.20; less dividends paid of \$17,847. \$180,062.20; assets over liabilities January 1, 1894, \$472,079.81.

The Missouri Valley Bridge & Iron Works of Leavenworth, Kan., which were closed down for several weeks, have resumed operations. The company have received a number of new contracts and expect to keep their men going for quite a long time after beginning to work. A contract was a few days ago awarded to this company by the Tacoma City Council for a large steel bridge.

The Westinghouse Electric & Mfg. Company of Pittsburgh have declared a quarterly dividend of 1½ per cent. upon the preferred stock, payable on April 2 to stockholders of record of March 22. It is stated that this concern will soon become a very active competitor in the direct current arc light business. It is stated that a generator has recently been perfected for which some advantages over any of the forms now in use are claimed. Its regulation is said to be automatic from no load to full load, and its efficiency some 10 per cent. higher than the average of generators now sold. The arc lamps used in connection with it are claimed to be of superior design, and it is the intention of the firm to establish rates for this arc lighting apparatus on a purely commercial basis.

The Lincoln Foundry & Machine Company of Pittsburgh made application for a charter of incorporation. Among those interested in the new foundry is Otis H. Childs, formerly secretary of the Carnegie Steel Company, Limited, at Pittsburgh.

The Ball Engine Company, Limited, Erie, Pa., have contracted to put in 2200 horsepower cross compound engines in the Lumber Exchange Building, Minneapolis, Minn.; 125 horsepower simple engine in the store building of Willoughby, Hill & Co. of Chicago; one 80 horsepower engine in the large building of Cummer, Craig & Co. of Boston, Mass., and one 80 horsepower engine in the Industrial Home for the Blind of Chicago.

The Robinson-Rea Mfg. Company, Pittsburgh, Pa., have received a contract to erect four stands of rolls for the American Tin Plate Company of Elwood, Ind.

The Graham Car Truck Company talk of locating a plant at New London, Conn. Heretofore the products of the company

have been made under special contracts by Boston and Philadelphia parties.

The Madison Car Company, at Madison, Ill., will increase their capital stock to \$1,000,000, reorganize the company and arrange to pay all creditors in full.

A revival of industrial enterprises is reported throughout the South.

The car shops of the Lake Shore Railroad may be consolidated at Toledo, Ohio. The company already own sufficient land there for the purpose.

Work has been resumed in the shops of the American Steel Barge Company, West Superior, Wis., 200 men being employed.

Among newly authorized corporations in Illinois are the following: Western Automatic Light Company, at Chicago; capital stock, \$500,000; incorporators, William J. Stapleton, Ed S. Clark and Maud Freeman. Davis-Johnson Company, at Chicago; capital stock, \$10,000; manufacture hardware, merchandise, &c.; incorporators, Jerome E. Davis, Ira C. Wood and Howard M. Carter. M. E. Griswold Company, at Chicago; capital stock, \$10,000; manufacture bicycle sundries; incorporators, Charles W. Allen, John A. Ryerson and Hamilton Schuyler. The Duplex Improved Air Brake Company, at East St. Louis; capital stock, \$2,500,000; incorporators, C. G. Stifel, Redmond Cleary, John Mullally, E. C. Donk, D. P. Slattery, E. H. Conrades and Sanford Northrop. The Automatic Vertical Car Coupler Company, at Gano; capital stock, \$10,000; incorporators, Otto Klein, M. W. Matson and Martin Yost. Manufacturers' Tool Supply Company, Chicago; capital stock, \$20,000; incorporators, Henry S. Shedd, James F. Hutchison and A. W. Underwood. Louis R. Comstock Company, Chicago; capital stock, \$20,000; general electric engineering and construction; incorporators, Louis A. Comstock, Frederick S. Richmond, Paul V. Cary. Madison Light & Power Company, Chicago; capital stock, \$10,000; incorporators, George M. Shippy, Edward P. Ames, Frank J. Baker.

The final papers for the location of the Kitz Implement Company at Alexandria, Ind., have been signed. The company locate for a consideration of \$50,000 and free gas. The factory will be a substantial one, and, it is said, will employ 250 men when in full operation. Mowers, rakes and other agricultural implements will be manufactured.

The Erie Car Works, at Erie, Pa., which have been operated for several months past as repair shops by the Lake Shore road, have closed down and may never be operated again.

The stockholders of the Lebanon Chain Works, Lebanon, Pa., have elected the following officers: Thomas Evans, Herbert T. Hecht, Eli Attwood, Robert C. Mish, O. C. Boyd, J. R. Beckley and H. T. Atkins. Thomas Evans was elected president, H. Hecht secretary and H. T. Atkins treasurer.

The Page Belting Company of Concord, N. H., report that they are making three wide belts for the Suburban Electric Company, Elizabeth, N. J.; a 54-inch double for the Union Railway Company, New York, and for a large New England manufacturing concern a wide three-ply belt, of construction similar to the large tandem belts which they exhibited at the World's Fair running on the Allis engine. Besides these orders they have recently shipped to Japan a very large order of single belting, the third received from that country since the first of the month.

The Stewart Iron Works of Wichita, Kan., enjoy the distinction in these times of being very busy. They have a large contract for the Salt Lake City Court House amounting to \$60,000, with smaller contracts for buildings in Utah, Texas and other portions of the West and Southwest. The output of this establishment consists of iron stairs, jail fixtures, iron fencing and general wrought and cast iron work for buildings. A special department is devoted to the manufacture and sale of the Dwyer patent spring heel and rubber pad horseshoe. This they put out under the firm name of Stewart Bros. It has hitherto been made in the East because they did not have the proper machinery at Wichita, but R. C. Stewart is now in Pennsylvania looking after special machinery for it, and as soon as they get this branch properly under way they will put on the road seven or eight salesmen who will handle only these patent horseshoes.

It is stated that the American Brass Works of Cambridge, Mass., will remove to Valparaiso, Ind.

The Neafie & Levy Shipbuilding Company of Philadelphia, Pa., have secured the contract for building a vessel for the West India trade. The boat will be 242 feet long, 35 feet beam and 20 feet depth of hold and will carry saloon passengers and a general cargo. She will have twin propellers. The same company have contracted to build a steel passenger steamboat to ply between Baltimore and Washington. She will be 180 feet long, 40 feet beam and 12 feet depth of hold.

Freight Rates.

(By Telegraph.)

Taking effect on Thursday, March 22, rates on articles of iron and steel manufactures, in less than carload lots, from Pittsburgh and points taking Pittsburgh rates to Western points of shipment, will be reduced to the basis of sixth class rates. After the above date rates in less than carload lots from Pittsburgh to Chicago will be 15 cents; East St. Louis, 18½ cents; Cincinnati, 12 cents; Louisville, 16 cents; Cairo, Ill., 21 cents.

Chas. H. Morse, Commissioner of Labor of Michigan, reports that at an iron mine on the Marquette range, whose full complement is 800 men, the net earnings per day of contract labor, including miners and skip tenders, have been as follows for a series of years:

1884.....	\$2.32
1885.....	2.22
1886.....	2.39
1887.....	2.39
1888.....	2.36
1889.....	2.46
1890.....	2.58
1891.....	2.51
1892.....	2.43
1893, first nine months.....	2.11
1893, October, November.....	1.54

This is exclusive of cost of oil, candles and explosives, and represents net earnings.

It is interesting to note that a section practically identical with the Dudley rail section, which is now so widely used, was designed on June 12, 1889, by Henry Wehrum of Scranton, Pa., who submitted it to the Pennsylvania Railroad for a 90-pound rail.

The report has been current that the Riverside Iron Company of Wheeling, W. Va., and the Bellaire Steel Company of Bellaire, Ohio, have been offered \$75,000 each to shut down their respective plants. So far as the former company are concerned, we are officially advised that there is absolutely no foundation for the report.

It is reported that negotiations are on foot to pool the interests of the five large builders of water works pumping machinery, the Allis, Holly, Worthington, Snow and Blake concerns being named.

The Fire Underwriters' Association of Chicago has advanced the rate on mercantile risks in that city 25 per cent. This increase, which affects \$150,000,000 worth of property, has caused a united protest by the business men of Chicago.

A Harrisburg, Pa., dispatch states that the Pennsylvania Steel Company have received an order for 1000 tons of steel rails from the Cumberland Valley Railroad Company.

The Iron and Metal Trades.

Reports are current of additional sales of Lake Ore, the transactions this time including Mesaba Ores other than those controlled by the Minnesota Company. There is no doubt that Mesaba Bessemer Ores have sold at \$2.25, lower Lake ports, and there is evidence pointing to the fact that such figures have been made by the Rockefeller interest.

With Ore so cheap and Connellsville Coke at very low prices, Pig Iron manufacturers west of the Alleghanies and north of the Ohio River must be able to make astoundingly cheap Pig Iron this year.

It is just to Coke interests, when discussing prices on that fuel, to state that while 85¢ and even 80¢ has been done, no furnace contracts involving delivery over a long period have been placed below 90¢.

Soft Steel is quiet in the Pittsburgh market, where thus far \$15.25 for Billets has not been shaded. Some business has been done in Chicago, where prices are lower through the cut in freight rates.

A good deal of fine work has apparently been going on in juggling with freight rates, to judge from retaliatory open cuts. Pittsburgh has secured lower rates to the territory west of it. It is coming out now also that liberal, and in some cases quite complicated, secret rebates have been made on Southern Pig Iron into territory north of the Ohio River. It is reported that they amounted to a cut of about 60¢ on a rate under \$4. Unless matters are patched up at the meeting now in progress there is a likelihood of lively cutting in Southern Pig Iron rates in the near future.

The pounding of prices on Finished Iron and Steel continues unabated. Pittsburgh has gone down squarely to 1¢ ¢ lb on Plates and Angles, and is down to 1.15¢ on Beams. The only recent transaction in Plates is the sale of about 2500 tons of Light Plates by two Eastern Pennsylvania concerns for Pacific Coast delivery. More work of this character is pending. Chicago reports some good orders in Bars.

On the whole, the volume of business originating in sources outside of the railroads is as good as can be expected. It is becoming clearer every day that no improvement of any staying power can be expected until the railroads come up to their average in their purchases. Months of steady growth in net earnings must pass by until the requisitions from operating officers are dragged out of pigeon holes.

Tin has had a jump of about 1¢ ¢ lb during the week under review. The Lead market has developed some strength, while Spelter continues dull.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, March 14, 1894.

The volume of business in Finished Iron and Steel steadily grows larger and yet the situation does not improve. There is an undertone of dissatisfaction with general conditions. The new freight rates from Eastern points have introduced another decidedly disturbing element. Local producing interests are unfavorably affected. They are subject to an increased competition on the products they sell while they have been given no corresponding reduction on freight rates on Coke and other raw materials. The discrimination on Pig Iron is apparently worse than ever. An analysis of these rates would be very interesting, but the subject is too great to be treated in this report. A rumor prevails that rates on Southern Pig Iron will probably be reduced at an early day, which will still further complicate the situation. Efforts are being made by the local manufacturers to have these inequalities adjusted. Opinions conflict regarding the duration of the low freight rates now made. Some believe that old rates may be restored within a few days; others, however, believe that as the opening of navigation on the lakes is approaching the rail rates will be kept low for an indefinite time to compete with low water rates.

Pig Iron.—Local Irons have been in moderate demand, with no heavy transactions. Dealers state that under existing conditions it is perhaps better not to make long time contracts, because they simply lead to dissatisfaction as long as prices continue to decline. Sellers of Southern Irons generally report a very quiet trade; sales still confined to Soft Iron. Lake Superior Charcoal is moving in carload lots only. Prospects in a general way are looking up for an increased volume of business. The local foundries are doing more from week to week, although their orders are of a small character, seldom calling for more than a few columns and for small store fronts, &c. Quotations are given as follows for cash:

Lake Superior Charcoal.....	\$15.00 @	\$15.25
Local Coke Foundry, No. 1....	12.00 @	12.50
Local Coke Foundry, No. 2....	11.50 @	12.00
Local Coke Foundry, No. 3....	11.00 @	11.50
Local Scotch.....	13.00 @	13.50
Ohio Strong Softeners No. 1....	13.50 @	14.50
Southern Silvery, No. 1.....	11.00 @	12.50
Southern Silvery, No. 2.....	11.75 @	12.75
Southern Coke, No. 1.....	11.25 @	11.50
Southern Coke, No. 2.....	10.75 @	11.00
Southern, No. 1, Soft.....	11.25 @	11.50
Southern, No. 2, Soft.....	10.75 @	11.00
Tennessee Charcoal, No. 1....	15.50 @	16.00
Tennessee Charcoal, No. 2....	15.00 @	15.25
Southern Gray Forge.....	10.25 @	10.50
Alabama Car Wheel.....	13.50 @	14.65
Jackson County Silvery.....	15.00 @	16.00
Other Ohio Silvery.....	13.00 @	13.50
Coke Bessemer.....	12.00 @	12.50

Bars.—Several contracts, considerably larger than the recent run of orders, have been placed during the week. Among these was one of 1000 tons or more for a large Northwestern implement works. Another 1000 tons was sold to a local consumer. A car order for 1000 to 2000 tons was also placed. Inquiries are considerably better from implement works, wagon works and other manufacturing consumers, but the railroad trade is lagging. The drop in freight rates from Eastern points has not affected Bar prices to any extent. Bar Iron continues to be quoted for mill shipment at 1.15¢ @ 1.25¢, Chicago, while Soft Steel Bars from strictly Billet stock are selling at 1.20¢ @ 1.30¢. Jobbers are also experiencing an increased demand and quote 1.35¢ @

1.40¢ for Bar Iron, and 1.35¢ @ 1.50¢ for Soft Steel Bars.

Structural Material.—A local bridge works secured an order for 1000 tons of elevated structure from the Metropolitan road. The work calls for some 20 and 24 inch Beams, and as the purchase could not be separated the contract for the material went to Pittsburgh. A great deal of business is now coming in for building, but all in a small way. This makes the yards extremely busy. Quotations at present are as follows for Chicago delivery: Beams and Channels, 1.40¢ @ 1.45¢; Tees, 1.50¢ @ 1.60¢; Angles, 1.35¢ @ 1.45¢; Universal Plates, 1.40¢ @ 1.50¢. Small lots from stock are sold at an advance of 10¢ @ 15¢ ¢ 100 above these prices.

Plates.—Among the large orders now on the market is one for 3000 tons for a water works extension on the Pacific Slope. Another contract in sight calls for 2000 tons and is from the same locality. Jobbers report a very much larger demand for small lots from stock. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.35¢ @ 1.45¢; Flange Steel, 1.80¢ @ 1.90¢; Fire Box, 2¢ @ 5¢. Store prices are as follows: Iron or Steel Sheets, Nos. 10 to 14, 1.80¢ @ 1.90¢; Tank Steel, 1.65¢ @ 1.85¢; Flange Steel, 2.15¢ @ 2.35¢; Boiler Tubes, 75 ¢ off.

Sheets.—Inquiries have been received for Black Sheets, but the demand is not large and competition is keen for everything of this character now coming up. Quotations on small lots of No. 27 Common Iron or Soft Steel are 2.40¢ @ 2.50¢, Chicago. Small lots are selling from stock at 2.80¢ @ 2.90¢. Galvanized Sheets are in about the same condition as Black Sheets. New concerns are making special inducements to secure trade and are quoting extremely low prices. General quotations on mill shipments of Juniata are 75 and 10 and 5 ¢ off. Small lots from stock are selling at 75 ¢. Quotations on Sheet Copper range from 30 ¢ to 40 ¢ off for Light Sheets and up to 45 ¢ off for Heavy Sheets, according to quantity.

Merchant Steel.—Only small lots are moving under this head. Manufacturing consumers have recently placed a few contracts for season requirements, but they are very much below the quantity purchased by the same concerns last year. We quote mill shipments, Chicago delivery: Smooth Finished Machinery and Tire, 1.75¢ @ 1.85¢; Open Hearth Spring Steel, 1.85¢ @ 1.90¢; Bessemer Machinery, 1.55¢ @ 1.60¢; Bessemer Tire, 1.40¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Billets and Rods.—Inquiries for Billets have been stimulated for some reason. A sale of 7500 tons is announced. Prices are now \$17.50 @ \$17.75 in consequence of the lower Eastern freights. An accident in the Joliet Rod mill will stop production there for two to three weeks, thus cutting off a considerable part of the supply of Rods. The nominal price is still \$25.

Rails and Track Supplies.—The Steel Rail trade shows no marked changes. Orders are coming in for small quantities, but the leading railroads are still hesitating about placing contracts for their annual requirements. Prices are unchanged at \$25 @ \$27, according to quantity. Splice Bars are quoted at 1.40¢; Track Bolts with Hexagon Nuts, 2.40¢ @ 2.45¢; Spikes, 1.75¢ @ 1.80¢.

Old Rails and Car Wheels.—No transactions are reported in Old Iron Rails. Dealers quote nominal prices, \$10 50 @ \$11, but state that railroads are not inclined to part with their stock at these prices, which are the best that could be obtained from consumers. Old Steel Rails, long lengths, are quoted at \$9.50 @ \$10, and short pieces at \$7. Old Car Wheels are unchanged at \$10 @ \$10.50.

Scrap.—This branch of business has been more seriously disturbed by the change in freight rates than any other. The dealers are confronted by a pressure for lower prices from local consumers, while they have been given no compensating relief in lower rates to Eastern consuming points. They expect the Traffic Association to give them this relief within a few days, in compliance with promises which have been made. Meanwhile quotations are omitted until the market becomes settled.

Metals.—Lake Superior Copper in carload lots is quoted at 10½¢, and casting Copper 9.50¢. Spelter has sold off to 3 60¢ @ 3 62½¢. Pig Lead is strong but dull at 3 15¢ @ 3 17½¢.

The Block-Pollak Iron Company, Commerce Building, Chicago, were the highest bidders on some of the World's Fair buildings, for which bids were opened on the 10th inst. by the South Park Commissioners of Chicago. They offered \$15,625 for Machinery Hall, Mines and Mining, Transportation, Agricultural and Electricity. Agricultural Building is to be removed by May 1, 1895, and the others by May 1, 1896. As the Block-Pollak Iron Company's bid was higher considerably than that of any other parties, they are quite confident that they will secure the buildings named. They will then be in a position to make very good contracts for the sale of the structural material for use in the erection of larger buildings elsewhere. The best offer for the great Manufacturers Building was \$10,000 by Dion Geraldine.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., March 13, 1894.

The market shows no decided change, and although the trade hope for the best there is but little chance of improvement until the tariff is settled. Any settlement will be better than continued uncertainty, and, as a matter of fact, the schedule presented a few days ago would probably do less harm than to be tinkering along week after week without settling anything. There would be only a very slender chance of foreign material coming in under the revised tariff. The worst feature would be its repressive character. So long as prices remain in the same relative proportions as at present there would be no danger, but in case of a \$2 or \$3 advance on this side, without which business is hardly worth handling, it would place matters in quite a different position. A little advance here or a little decline in Europe would always be a source of danger, and it is this feature that the trade are anxious to guard against. Under present circumstances, however, it is no use guessing at anything, as there is no certainty what the tariff will be, when it will be settled, or whether anything will be done at all. The bright springlike weather is having a good effect, and while nothing heavy is looked for, it is hoped that there will be at least the usual increase in the volume of business which is

looked for during the spring and summer months.

Pig Iron.—Sellers claim to be finding a somewhat better demand, and notwithstanding the increased production, say they are placing all their output without making any sacrifice in prices. This may possibly be the case, temporarily; but so far as reports from consumers go, it is difficult to find anything to confirm the statement that business is actually larger than it has been at any time since the beginning of the year. Nevertheless, there is a general testimony from sellers that they can move more material at full prices and with less pressure, so that we must accept their statement that the market is better to the extent mentioned. Naturally things ought to be very much better after so many months of depression, and if the right kind of a start is once made, the improvement ought to be still more marked, as we are on little more than a 50 % basis compared with the two or three years immediately preceding. The trade will be profoundly thankful to find that the volume of business is increasing; but judging from their own individual experience, consumers are slow to accept any very strong assurances of that kind. The market was never in a better condition to respond to any favorable developments, and while it cannot be talked up, it will soon bring its own proof of improvement if there is anything legitimate to base it on. The trade feel very much encouraged, and it is hoped that before the end of the month the results will show that their ideas are well founded. Meanwhile sales are chiefly at figures quoted below for Philadelphia and near by points, but with a marked tendency to get away from the inside figures:

No. 1 Foundry	\$13.00 @	\$13.50
No. 2 Foundry	12.25 @	12.75
Standard Gray Forge	11.00 @	11.25
Ordinary Gray Forge	10.75 @	11.00

Steel Billets.—There is some discrepancy in the reports in regard to prices of Billets, sellers claiming that \$17.75, delivered, is an inside figure, while buyers intimate that they are asked to make bids at \$17 50, which figure they consider is out of proportion to the price of Finished Material. There is some inquiry for good sized lots, and it is probable that business will be arranged in the course of a few days, but buyers will require some concessions before they can be induced to place large orders.

Finished Material.—There has been some increase of work at the mills, and while general business cannot be said to show any decided improvement, the fact that mills are running fuller than for some time past is an encouraging feature. A 2500 ton order for light Iron Plates for immediate delivery was taken recently by the Alan Wood Company and the Central Iron Works at Harrisburg, which, with their regular run of orders, will keep them busy during the balance of the month. Other mills in the neighborhood are keeping moderately in line, but any very decided improvement depends on orders that are as yet somewhat indefinite. The outlook is believed to be encouraging, nevertheless, as a vast amount of Structural Material will be required during the spring and summer months. Some competent authorities figure out 80,000 to 100,000 tons for New York and Philadelphia, besides which there will be a good deal of miscellaneous work. For the present, however, competition is so sharp that there is no money in the business, prices being even lower

than they were a week ago. This, in fact, may be said of all descriptions of Finished Material, and so far as present appearances show there is no immediate prospect of any change for the better, although, as we said before, the volume of business is likely to be larger, and that in its turn ought to help prices. Meanwhile, it is almost impossible to quote with any degree of accuracy, as everything depends on quantity, delivery and requirements as to quality, but asking prices for small lots are about as follows, with the usual concessions on large orders:

Grooved Skelp, delivered.....	1.25¢ @	1.30¢
Best Refined Bars.....	1.30¢ @	1.40¢
At interior points.....	1.15¢ @	1.20¢
Tank Steel.....	1.25¢ @	1.35¢
Heavy Plates.....	1.30¢ @	1.40¢
Shell.....	1.40¢ @	1.50¢
Flange.....	1.60¢ @	1.80¢
Angles.....	1.30¢ @	1.40¢
Beams and Channels.....	1.50¢ @	1.60¢

Old Material.—There is no improvement, except in Burnt Iron and Cast Borings, for which holders ask more money, say \$6.50 to \$7 delivered. Buyers seem to want lower prices with every decline in Finished Material, but Scrap has reached a point at which it is not worth handling, so that concessions are out of the question. Asking prices are about as follows:

Heavy Melting Steel.....	\$10.00 @	\$11.00
Light Melting Steel.....	8.00 @	9.00
No. 1 Wrought Scrap.....	10.00 @	11.00
Machinery Cast.....	9.50 @	10.00
Wrought Turnings.....	8.50 @	9.00
Cast Borings.....	6.50 @	7.00
Old Iron Rails.....	12.50 @	13.00

Justice Cox, Jr., of Philadelphia, well and favorably known as a leading broker and dealer in Iron and Steel, made an assignment on Saturday last. Mr. Cox was an agent and a director in the Mahoning Rolling Mill Company of Danville, Pa., and was also connected with several enterprises in the South, all of which, owing to the hard times, have involved him in considerable loss. Mr. Cox does not think his liabilities will exceed \$50,000 and he hopes to be able to continue in business.

Howard Siddell, who was for several years connected with the firm of Henry Levis & Co., has opened an office in the Imperial Building, 411 and 413 Walnut street, and will make a specialty of Iron, Steel and Railway Equipments.

Middleton & Co. is the name of a new firm just started at 244 South Third street, Philadelphia, and prepared to do business in Steel, Iron, Pipe, Spikes, Nails, Fencing and Railroad, Mine and Machinists' Supplies. The firm consists of A. C. Middleton, E. M. Middleton and H. McCalla, all formerly associated with the late Howard W. Middleton of Philadelphia, and W. S. Ivins, lately connected with the Market Street National Bank in that city.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, March 14, 1894.

There has been some increase in the demand for nearly all grades of Pig Iron during the week. Not that there were any round lots wanted, for either spot or forward delivery, but there was an increased number of small orders running from one to ten carloads, which in the aggregate make a larger volume of business than has been experienced for some weeks, but the demand was

quite freely met at previous prices, for while some of the stronger Southern Iron companies were closely sold up on some grades, there were others that were free sellers to be made, if not for spot. The demand was largely for No. 3 Foundry and No. 2 Soft, and it was fairly good for Gray Forge. No. 1 Foundry and No. 1 Soft was offered in excess of the demand, and some deliveries of No. 1 Soft were made on contracts for No. 2 Soft. There were sales of Charcoal Car Wheel Iron to a moderate extent and there are ample offerings at somewhat lower prices. Northern Irons are said to be offered more freely in Northern markets, and, when they come into competition with Southern Iron, at prices that will secure orders. Quotations are merely nominal, as follows:

Foundry.

Southern Coke, No. 1.....	\$11.00 @ \$11.25
Southern Coke, No. 2.....	10.00 @ 10.25
Southern Coke, No. 3.....	9.50 @ 9.75
Ohio Soft Stone Coal, No. 1.....	14.50 @ 15.50
Ohio Soft Stone Coal, No. 2.....	14.25 @ 14.50
Lake Superior Coke, No. 1.....	13.00 @ 13.50
Lake Superior Coke, No. 2.....	12.00 @ 12.25
Hanging Rock Charcoal, No. 1.....	17.00 @ 17.50
Hanging Rock Charcoal, No. 2.....	18.50 @ 17.00
Tennessee Charcoal, No. 1.....	13.50 @ 14.00
Tennessee Charcoal, No. 2.....	12.50 @ 13.00

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	16.75 @ 17.75
Lake Superior Car Wheel and Malleable.....	16.50 @ 17.00

Forge.

Gray Forge.....	9.00 @ 9.25
Mottled Coke.....	9.00 @ 9.25

St. Louis.*(By Telegraph.)*

Office of The Iron Age,
Bank of Commerce Building,
St. Louis, March 14, 1894.

Pig Iron.—The month of March is half over and still there is no improvement to note. In fact, so far as prices are concerned quite the reverse is the case. No. 2 Foundry has been sold on the basis of \$7.20, f.o.b. cars Birmingham, and it is intimated that this price has been shaded. Trading is very light and purchases are limited to immediate requirements. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry.....	\$11.50 @ \$12.00
Southern Coke, No. 2 Foundry.....	10.50 @ 10.75
Southern Coke, No. 3 Foundry.....	10.25 @ 10.50
Southern Gray Forge.....	9.75 @ 10.00
Southern Car Wheel.....	17.00 @ 18.00
Lake Superior Car Wheel.....	16.25 @ 16.50
Ohio Softeners.....	14.75 @ 15.00

Bar Iron.—The only feature of interest in this department is the cut in freight rates from Pittsburgh to St. Louis from 18½¢ to 13¢. Sales are limited and prices continue to go lower. Mills quote 1 15¢, with the intimation that 1.10¢ would be accepted. Jobbers ask 1.35¢ @ 1.45¢, according to quantity.

Barb Wire.—Continued improvement is the report, and mills are running full turn in their effort to keep abreast with orders. Sales are increasing and if the present demand keeps up there will be no difficulty in maintaining prices. Mills quote \$2.05 for Painted and \$2.45 for Galvanized, with 5¢ per cwt. less for carload quantities. Jobbers report an excellent demand.

Wire Nails.—It is reported that Wire Nails are again being offered at very low prices, in fact, almost as low as they have been heretofore quoted. The price of \$1.15 by a local house continues, and in the face of this figure it is difficult to advance prices. The demand is fairly good, but as indicated by the low

prices being offered not sufficiently heavy to maintain the general mill price, which is \$1.20 per keg. This price is shaded, and from now on lower prices are likely to rule.

Rails and Track Supplies.—There is some slight improvement to note in the demand for Splice Bars and Track Bolts, but outside of this the market is quiet. We quote as follows: Splice Bars, 1.40¢ @ 1.45¢; Spikes, 1.75¢ @ 1.80¢; Bolts, Square Nuts, 2.20¢; with Hexagon Nuts, 2.30¢. Links and Pins, 1.75¢ @ 1.80¢; Old Iron Rails are worth what they will bring, from \$10 to \$11. Steel Rails are unsettled and prices hard to quote. Nominally they are worth \$26 @ \$26.50.

Pig Lead.—Under the influence of heavy purchases Pig Lead has advanced to 3.15¢, a clear gain of 12½¢ since our last report. Sales are confined to consumers and the advance is a perfectly legitimate one. At the close to-day the market is strong and indications point to still higher figures.

Spelter.—The market has fluctuated between 3.60¢ and 3.65¢ and seems to have settled at the former figure, although one or two cars have been sold at 3.57½¢. The market seems to be in a fairly strong condition, however, and higher rather than lower prices are anticipated.

Pittsburgh.*(By Mail.)*

Office of The Iron Age, Hamilton Building,
PITTSBURGH, March 13, 1894.

The second week in March showed a slight improvement over the first week in the matter of inquiries and the outlook for an increased volume of business is encouraging. The reductions in Iron and Steel freights from this city to Western points have helped to bring this about. It is understood that these reductions are the outcome of rate cutting by lines out of Cleveland, which has been going on for some time. If a truce between the different roads is patched up it is not improbable that rates will be put back to their former basis, but if this is not done reductions on Eastbound business will likely be made at an early date. In the opinion of many in the trade there never was a more propitious time in the Iron and Steel trades to take on material than just now. Prices are down to rock bottom, stocks are at zero and a buying movement once started will undoubtedly bring higher prices very soon after its inception. The fact that some concerns do not care to sell too far ahead at present prices is also evidence that it will require but a moderate increase in volume of business to bring about a higher range of values.

Pig Iron.—To judge by the way idle stacks have been going in during the present month, it would seem that the makers of Pig Iron have renewed confidence in the future of the market. In the Mahoning Valley Grace Furnace of the Brier Hill Iron & Coal Company has gone in, while Mattie of the Girard Iron Company will resume this week. Jefferson of the Jefferson Iron Works, at Steubenville, also goes in this week, as does one of the Mingo furnaces, at Mingo Junction, Ohio. In the Shenango Valley one of the Etna furnaces of the Etna Iron Works, Limited, has resumed. In the Pittsburgh district Clinton went in last month, while Furnace H at Edgar Thomson and one of the Isabella stacks have gone in this month. This means, of course, a very large in-

crease in production, but it is believed that demand will soon show substantial increase. The product of Pig Iron in Allegheny County is now very close to capacity. In Gray Forge the market is unchanged, the demand being light owing to so many mills having discarded puddling. Foundry Iron is moving only in small lots and prices are weak. We quote as follows:

Neutral Gray Forge.....	\$9.50 @ \$9.75, cash.
All-Ore Mill.....	9.75 @ 10.00
No. 1 Foundry.....	11.50 @ 11.75
No. 2 Foundry.....	10.50 @ 10.75
Bessemer.....	10.40 @ 10.50

We note a sale of 500 tons of Gray Forge for April at \$9.50, delivered.

Billets.—The market shows no change, demand being extremely light. During the last few days there has been a perceptible increase in inquiries, and it is believed that some of the Wire Nail and Wire makers are about ready to enter the market again. The price of Steel is nominally \$15.50 at makers' mill, but offers have been made to sell at \$16.50, Cleveland, equal to \$15.35, Pittsburgh.

Ferromanganese.—We quote \$52, delivered at buyer's mill, for small lots of 80 % domestic.

Plates.—No special lots came up during the week, although makers report considerable work insight. For ordinary lots we quote as follows: Tank Steel, 1.15¢ @ 1.20¢; Shell, 1.35¢ @ 1.45¢; Flange, 1.50¢ @ 1.60¢; Fire Box Steel, 1.75¢ @ 4¢, according to quality.

Structural Material.—Building operations have opened up in a limited way, and if one-half of the projects now on paper are carried through, there will be a heavier consumption of Structural Shapes this year than ever before. It is intimated that the plant of the Columbia Iron & Steel Company, at Uniontown, will be put in operation by the stockholders at an early date. We have reduced quotations slightly on Beams and quote as follows: Beams and Channels up to 15 inches, 1.20¢ @ 1.30¢, according to order; Angles and Universal Plates, 1.20¢ @ 1.25¢; Tees, 1.40¢ @ 1.50¢.

Muck Bars.—We quote nominally at \$19.50 @ \$20 for best grades, delivered at buyer's mill.

Bars.—It is evident that the Valley mills do not intend longer to pay 75¢ per ton more for puddling than is paid in Pittsburgh. It is not improbable that one or two of the mills there will be declared non union unless the men agree to accept the \$4 rate. The Bar Iron trade shows no improvement. Some of the mills have a fair amount of work, but none of them have anything like enough to keep them fully employed. We quote Iron Bars at 1.05¢ @ 1.15¢, according to order. Steel Bars are ruling at 1.10¢ @ 1.20¢ at mill, with Bar Iron extras.

Merchant Steel.—The reduction in freights from this city to Western points of shipment which went into effect yesterday is expected to stimulate buying to some extent. In certain quarters there is a belief that the low rates will soon be withdrawn. Prices are without change and we quote as follows: Bessemer Machinery, 1.40¢; Open Hearth Machinery, 1.60¢ @ 1.70¢; Open Hearth Spring, 1.70¢ @ 1.75¢; Toe Calk, 1.90¢; Machine Straightened Tire, 1.60¢; Sleigh Shoe, 1.85¢; Cold Rolled Shafting, 2.65¢ base. The quotation of 1.65¢ base on Cold Rolled Shafting which appeared last week was a typographical error, and should have read 2.65¢ base.

Skelp Iron and Steel.—There is a fair demand, with prices for ordinary lots ruling as follows: Grooved Steel Skelp, 1¢ @ 1.10¢; Sheared Steel Skelp, 1.10¢ @ 1.20¢; Grooved Iron Skelp, 1.20¢ @ 1.25¢; Sheared Iron Skelp, 1.30¢ @ 1.35¢. For attractive orders our lower quotations continue to be shaded.

Pipes and Tubes.—There is no improvement either in demand or prices. Makers hope, however, that with the advent of good weather there will be more business offered.

Wire Rods.—None of the mills in this district have any Rods to offer this side of July. A Western mill that has a limited quantity for this and next month have put the price at \$26. f.o.b. at mill. A difference of over \$10 per ton in Steel and Rods represents a nice profit in the latter.

Barb Wire.—In addition to the large orders booked early in the year, there is a good volume of orders coming in right along, and steady work is assured the mills for the next two or three months. The price of Four-Point Galvanized in carload lots is maintained at \$2.15, while Painted is \$1.75 in same quantities. Plain Wire is in good demand at \$1.35 in carload lots at mill.

Wire Nails.—Orders have fallen off very materially of late, but most of the mills have sufficient business to keep them fully employed for a month or two. We continue to quote Wire Nails at \$1.05 in carload lots at mill, but for a specially attractive order it is probable this price would be shaded 50¢. The shutting down of a prominent factory in this district has again given rise to the rumor that negotiations for the control of this plant are again under way. About a year ago similar negotiations were on foot, but were dropped for the time being. Cut Nails are in fair demand and are ruling at \$1 at mill in carload lots and \$1.05 in less quantities.

Connellsville Coke.—For the week ending Saturday, March 3, there were 10,899 ovens in the Connellsville region in blast and 6614 idle, the estimated production for the week being 102,654 tons. Compared with the previous week, this was an increase of 800 ovens and an increase in output of 3899 tons. Furnace Coke continues to rule at 85¢ @ 90¢, according to nature of order. Foundry Coke is ruling at \$1.05 @ \$1.15 to consumers.

As announced recently in these columns, the Baackes Wire Nail Company, Cleveland, Ohio, have made a settlement with their creditors and arrangements have recently been perfected by which the Wire Rod department of this plant will be put in operation on double turn, this week. The Wire Nail and Barb Wire departments have been in operation on double turn for some months, and as considerable business in both these products has been booked, it is expected that operations will be continued on the present basis for some time to come.

It does not appear definitely settled that the proposed new plant of the Johnson Company will be located at Cleveland. Tom L. Johnson states that the works are to include four blast furnaces, a mill for standard railroad rails, one for light rails, one for girder rails and one for structural shapes. The scheme is also to embrace a coking plant of ovens whose by products can be utilized. All this is to be done with an outlay of \$3,000,000.

New York.

Office of *The Iron Age*, 95-103 Reade street, }
New York, March 14, 1894. }

Pig Iron.—Business in this territory is light and no sales of consequence are reported. As showing how keen competition is, the fact is instanced that an order for 1000 tons No. 2, delivery Hoo-sick Falls, N. Y., was captured by a Virginia furnace. No contracts of any magnitude for Cast Iron Pipe have been placed lately. A very large order is, however, soon to come into the market. We quote standard brands \$13 @ \$13.50 for No. 1; \$12 @ \$12.50 for No. 2; \$11.25 @ \$12 for Gray Forge, at tide-water. Southern Iron, same delivery, \$12.75 @ \$13.25 for No. 1; \$11.25 @ \$11.75 for No. 2; \$11 @ \$11.25 for No. 3; \$11.25 @ \$11.75 for No. 2 Soft, and \$11.75 @ \$12 for No. 1 Soft. Foundry No. 4 (Foundry Forge) is \$10.50 @ \$11.

Ferromanganese and Spiegeleisen. Exports of Ferromanganese to England and the Continent continue. These shipments are all on orders captured some months since. No additional sales have taken place and none are probable so long as the home market takes enough to make sacrifice sales unnecessary. We quote domestic Ferromanganese \$51 @ \$51.50, tidewater, and foreign Spiegeleisen nominally \$21 @ \$22 for 10%, and \$24.50 @ \$25 for 20%, ex-ship.

Billets and Rods.—The market is dull. We quote \$18.25 @ \$18.75, tidewater, for domestic, and \$27 @ \$27.50 for foreign Billets. Domestic Wire Rods quoted at \$27.25 @ \$27.50, tidewater, while foreign are nominally \$39 @ \$40.

Steel Rails.—The market continues exceedingly dull for Standard sections, the aggregate orders and the aggregate deliveries thus far being the lowest on record for many years. How stories of cuts in prices get about is instanced by a recent transaction for a small lot. The seller had in store some Standard Rails carried for a long time, but of a weight heavier than that required by the buyer. Although the quality was excellent, they had been unsalable for a long time. The opportunity to get rid of them was availed of, and they were sold at a price close to \$18. In Light Rails the cutting continues, and on one lot of 500 tons better than \$23 at tidewater was done. We quote \$24 @ \$27 for Light Rails, according to section. Girder Rails are \$24 @ \$25 at mill. There is quite a good amount of business in them.

Track Material.—We quote as follows for small lots: Spikes, 1.65¢ @ 1.80¢; Fish Plates, 1.25¢ @ 1.40¢; Track Bolts, Square Nuts, 2¢ @ 2.30¢, and Hexagon Nuts, 2.20¢ @ 2.50¢, delivered.

Manufactured Iron and Steel.—A better run of small orders for Structural Iron for the local market is noted with the return of the building season. No large contracts have been placed during the last week, the largest being a lot of about 400 tons of Bolts, &c., for the false work of the Park avenue improvement. The Providence job has been divided, about three-fifths going to the Berlin Bridge Company of East Berlin, Conn., and the balance to the Pennsylvania Steel Company. Plate orders are scarce, and bridge work, particularly for railroads, is very light. Very low prices are reported on Steel Bars from the Pittsburgh district. We quote: Beams up to 15-inch, 1.35¢ @ 1.50¢, for round lots; Angles,

1.25¢ @ 1.35¢; Universal Mill Plates, 1.20¢ @ 1.35¢; Tees, 1.50¢ @ 1.70¢; Channels, 1.40¢ @ 1.60¢, on dock. Steel Plates are 1.25¢ @ 1.30¢ for Tank; 1.35¢ @ 1.40¢ for Shell; 1.55¢ @ 1.60¢ for Flange, and 1.75¢ @ 2¢ for Fire Box, and 2¢ @ 2.25¢ for Locomotive Fire Box, on dock; Refined Bars are 1.30¢ @ 1.9¢, on dock, and Common 1.20¢ @ 1.30¢; Soft Steel Bars are 1.15¢ @ 1.30¢; Scrap Axles are quotable at 1.35¢ @ 1.50¢, delivered; Steel Axles, 1.35¢ @ 1.50¢, and Links and Pins, 1.40¢ @ 1.60¢; Steel Hoops, 1.50¢ @ 1.70¢, delivered; Cotton Ties, 65¢ @ 72½¢ @ 45-lb bundle, at mill; Machinery Steel, 1.35¢ @ 1.50¢; Toe Calk, 1.90¢ @ 2¢, and Sleigh Shoe, 1.65¢ @ 1.75¢, delivered.

Old Material.—We note sales of 300 tons of Mixed Melting Scrap at \$9, and 300 tons of a better grade of Melting Scrap at \$9.25, delivered. Rolling Mill Scrap is selling at \$10 @ \$10.50, delivered. Old Steel Rails are offering at \$8.50 @ \$9. Old Iron Rails are nominally \$12.

The firm of Warren, Wood & Co., Pig Iron merchants, has dissolved. A new firm styled Henry M. Warren & Co., composed of Henry M. Warren, C. S. Woodward and Fred. L. Warren, has been formed.

Financial.

The existing financial situation is not materially different from that of a week ago. Improvement in general trade conditions continues, but is of a very slow and deliberate character. The fine, warm weather that has prevailed of late appears to have induced a more active movement in some of the industries, especially those dependent on spring trade, and orders for goods are reported as coming in more freely. Still there are no indications of any marked renewal of enterprise or of confidence. The uncertainty attending the tariff yet serves to hold the general business of the country in suspense. Moreover, reviving confidence has not been encouraged by the action of Congress in regard to the Bland bill for the coining of the seigniorage. The business now passing throughout the country is, in fact, mainly such as is imperative for the supply of current needs. Beyond that few consumers are inclined to go until the course of legislation is more generally apprehended.

Meanwhile the improved feeling in the stock market, noted in our last review, has been maintained and accentuated during the past week. There are evidences of a material revival of interest in investments and speculation by the general public. Renewed activity in Wall street has caused an increase in the volume of loan business. Yet the stock of surplus money offered for loan is of such magnitude that no corresponding advance in rates has occurred. Money remains extremely easy. The rate for call loans does not rise above 1%, with plentiful offering. Increased speculation has induced a more brisk demand for time loans, but the supply increases daily. Rates continue unchanged at 2% for 30 to 60 days; 2½% for 90 days to four months, and 3% for six months. Commercial paper is in good demand, but the supply of good names is very limited. The few offered are promptly absorbed. Rates are quoted as 3% for indorsed receivables; 3½% @ 4% for best single

names, and $4\frac{1}{2}\%$ @ $5\frac{1}{2}\%$ for others, having from four to six months to run.

The weekly statement of the New York banks, issued last Saturday, exhibited no particularly interesting features. A small decrease of \$145,500 in surplus reserve was shown, with an increase of \$646,100 in loans. The banks now hold \$75,633,375 above the legal requirement, as against \$4,643,275 at this date a year ago and \$16,196,450 two years ago. The following table shows the changes as compared with last week:

	March 3.	March 10.	Differences.
Loans ..	\$439,303,400	\$439,949,500	Inc. \$646,100
Specie....	97,526,300	97,363,800	Dec. 162,500
Legal tenders.	111,187,900	111,545,500	Inc. 357,600
Deposits..	531,741,200	533,103,700	Inc. 1,362,500
Circulation....	13,640,000	13,533,700	Dec. 106,300

No further gold exports have been made; and, as London has been a heavy buyer of American railroad securities within the past few days, it is unlikely that any more of the metal will be shipped to that quarter at present. Sterling exchange has been, and continues, dull and firm, with very languid demand and a fair supply of bills. Actual business was done on Wednesday at \$4 87 $\frac{1}{2}$ @ \$4.87 $\frac{1}{2}$ for 60 days, \$4.88 $\frac{1}{2}$ @ \$4.89 for demand; \$4.89 $\frac{1}{2}$ @ \$4.89 $\frac{1}{2}$ for cables and \$4.86 $\frac{1}{2}$ @ \$4.86 $\frac{1}{2}$ for commercial.

Domestic exchange on New York is quoted as follows: New Orleans, commercial 75 premium, bank 150 premium; Charleston, buying par, selling $\frac{1}{2}$ premium; San Francisco, sight 15, telegraph 20 premium; Savannah, buying par, selling $\frac{1}{2}$ premium; Chicago, 50 @ 60 premium; St. Louis, 90 premium.

The stock market has been quite active for the past ten days. The activity commenced with some extraordinary performances of American Sugar, which stock has been mysteriously manipulated from day to day, and has monopolized the lion's share of attention on several occasions by its sensational fluctuations. The activity, however, has gradually extended to all the more active stocks, bringing with it renewed strength and a better feeling, which have served to improve the general tone of the market. Railroad issues have been specially favored, and have generally scored some points during the week. Missouri Pacific's unexpectedly favorable statement, issued on Monday, caused a rise of two and a half points in that stock. The grangers have been particularly strong and active. Although a fall in the price of wheat on Monday caused a temporary weakness and active selling, these securities more than recovered themselves on the following day, on unusually large buying orders from London. St. Paul, Atchison and Louisville were specially in request. National Lead and Chicago Gas have also been among the securities which have shared in the general improvement. The market in general closed strong and active on Wednesday. The fluctuations of a few of the more active stocks during the week are noted on the appended list:

	High-est.	Low-est.	Closing
Am. Sugar Ref.....	92 $\frac{1}{2}$	86 $\frac{1}{2}$	91 $\frac{1}{2}$
Atchison, T. & S. F.....	16	13 $\frac{1}{2}$	15 $\frac{1}{2}$
Chicago Gas.....	67 $\frac{1}{2}$	64 $\frac{1}{2}$	64 $\frac{1}{2}$
Chic., B. & Q.....	81 $\frac{1}{2}$	79 $\frac{1}{2}$	81 $\frac{1}{2}$
Chic., Mil. & St. Paul....	63 $\frac{1}{2}$	61 $\frac{1}{2}$	63
Gen. Electric.....	45 $\frac{1}{2}$	42 $\frac{1}{2}$	43 $\frac{1}{2}$
Louisville & Nashville....	49 $\frac{1}{2}$	46 $\frac{1}{2}$	48 $\frac{1}{2}$
Missouri Pacific.....	27 $\frac{1}{2}$	24	26 $\frac{1}{2}$
National Lead, Common.	34 $\frac{1}{2}$	30 $\frac{1}{2}$	33 $\frac{1}{2}$
New York Central.....	101 $\frac{1}{2}$	99 $\frac{1}{2}$	100 $\frac{1}{2}$
Western Union.....	87 $\frac{1}{2}$	85 $\frac{1}{2}$	85 $\frac{1}{2}$

The railway and miscellaneous bond market has been strong, with an active

demand from investors for good interest paying issues. Most lines of bonds have scored important gains. The returning confidence of investors is reflected in the fact that transactions in the bond market last week—aggregating about \$9,000,000—exceeded, for the first time in many months, the dealings for the corresponding period of the former year. Government bonds have been firm. The closing quotations were as follows:

	Bid.	Asked.
2's, 1891, registered.....	96	
4's, registered.....	112 $\frac{1}{2}$	113 $\frac{1}{2}$
4's, coupon.....	113 $\frac{1}{2}$	
5's, registered.....	117 $\frac{1}{2}$	117 $\frac{1}{2}$
5's, coupon.....	117 $\frac{1}{2}$	117 $\frac{1}{2}$

Bar silver, which scored the lowest price on record last week, has again advanced slightly. It is now quoted in London at 27 $\frac{1}{2}$ pence and in this city at 59 $\frac{1}{2}$ ¢ per ounce. Exports of the metal have not been so heavy during the week.

Metal Market.

Pig Tin.—From the extremely low price touched last week there has been a reaction of nearly 1¢ per pound. During the period covered by the report in our last issue, as low as 18.25¢ was quoted. During the past few days bids of 19.15¢, net cash, for 5-ton lots, prompt or near future delivery, have been made and rumor has it that a few sales were quietly made at 19.20¢ @ 19.25¢. Despite this sharp movement in prices, speculation has not enlivened in the slightest degree; at least not on the Exchange. For that matter, the leading operators there have acted as though they were content with making official quotations and dealing out Tin in a jobbing way at corresponding prices. Purely speculative sentiment, however, would seem to have recovered from the shock given by tariff uncertainties and the depression in silver, but despite this circumstance and the advance that has taken place of about £3 per ton in London quotations the tendency to venture has been remarkably tame. This encourages the idea that the market is being manipulated, chiefly for the purpose of facilitating the distribution of Tin that has arrived since the duty of 4¢ per pound went into effect. How near the various theories may be to facts is problematical, but not a few distributors stated that their sales have increased to an encouraging extent since prices turned for the better.

Copper.—Purchases by home consumers have been on a somewhat more liberal scale; that is to say, the volume of business shows improvement as compared with the average of the preceding two or three weeks. No large individual transactions have taken place, however, and it is the general report that the deliveries called for have not exceeded 30 days. In fact, the bulk of the business has been for practically prompt delivery. Prices have undergone no radical change, but are still somewhat irregular. Lake Superior Ingot went at 9 $\frac{1}{2}$ ¢ in lots of 25,000 to 50,000 lb, and any higher rate seems quite exceptional at the moment. Electrolytic is held at 9 $\frac{1}{2}$ ¢, and casting brands at 9 $\frac{1}{2}$ ¢, but business has been effected very recently at concessions of $\frac{1}{2}$ ¢ or more. The monthly statement of the Bureau of Statistics gives returns of exports as follows:

	1894.	1893.
Ore.	Tons.	Tons.
To United Kingdom....	1,026	4,096
To Germany.....	none	none
Totals.....	1,026	4,096

	Seven mos. to Jan. 31.	1894.	1893.
Ore.	Tons.	Tons.	Tons.
To United Kingdom....	21,884	25,408	
To Germany.....	1,015	78	
Totals.....	22,899	25,486	

	1894.	1893.
Ingots, Bars, &c.	Lbs.	Lbs.
To United Kingdom....	4,789,691	595,455
To Germany.....	1,541,754	170,739
To France.....	2,284,691	1,110,587
To other Europe.....	6,006,032	880,726
To elsewhere.....	50,600	none
Totals.....	14,652,758	2,757,417

	Seven mos. to Jan. 31.	1894.	1893.
Ingots, Bars, &c.	Lbs.	Lbs.	Lbs.
To United Kingdom....	45,000,961	1,744,117	
To Germany.....	16,072,615	2,087,790	
To France.....	22,817,027	6,239,347	
To other Europe.....	46,701,954	5,688,505	
To elsewhere.....	453,894	57,787	
Totals.....	129,054,551	15,817,546	

Pig Lead.—The market has developed fairly strong tone and the improvement in that particular has been accompanied by a larger volume of business with a little showing of speculative interest besides. Of round lots there were sales aggregating 750 tons or more at 3.30¢ @ 3.35¢, and a number of single carload lots went at from 3.32 $\frac{1}{2}$ ¢ up to 3.40¢ on the spot. The higher figures prevailed at the end of the week, with offerings moderate of stock for delivery before May, and spot supplies lighter than usual at this season of the year.

Spelter.—There has been hardly any business here except in single carload lots and not a great deal of that. The demand has continued very tame also, and, as far as New York is concerned, no improvement can be noted over the conditions that prevailed a week ago. Ordinary Western brands are still quoted at 3.85¢ @ 2.90¢ here, in carload lots, and the better sorts command little if anything more than the usual premium.

Antimony.—No change has taken place, business being of routine character, while prices remain steady at about 8 $\frac{1}{2}$ ¢ @ 9¢ for Hallett's and 10 $\frac{1}{2}$ ¢ @ 10 $\frac{1}{2}$ ¢ for Cookson's.

Nickel.—Quotations remain at 45¢ @ 55¢, according to size of lot, but reports come from some quarters that sales have recently been made at much lower figures.

Tin Plate.—Business has been uneven and considerably backward for this season of the year. Large consumers seem to have something to spare from the deliveries making on back orders and they are contracting for future shipments in a very indifferent manner. Jobbers are quite as backward in the matter of anticipating later requirements. From the smaller trade the demand for spot goods has improved very little, if at all, and, upon the whole, the market shows poor form in a surprising degree. Store prices have been lowered somewhat nearly all along the line and our quotations are adjusted accordingly. Those figures, however, could probably be beaten by 2 $\frac{1}{2}$ ¢ @ 5¢ per box on really desirable orders. We quote: Coke Tins—Penlan grade, IC, 14 x 20, \$5.15; J. B. grade, do., \$5.25; Bessemer full weight, \$5.20; light weights, \$4.80 for 100 lb, \$4.70 for 95 lb, \$4.55 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.40; Siemens Steel, IC basis, \$5.50; IX basis, \$6.60. Charcoals—Melyn grade, IC, \$6.35; Crosses, \$7.87 $\frac{1}{2}$; Allaway grade, IC, \$5.40 @ \$5.50; Crosses, \$6.60; Grange grade, IC, \$5.60; Crosses, \$6.70. Charcoal Terns—Worcester, 14 x 20, scarce; do., 20 x 28, \$11.35; M. F.,

14 x 20, \$7.25; do., 20 x 28, \$14.50; Dean grade, 14 x 20, \$5.25; do., 20 x 28, \$10.50; D. R. D. grade, 14 x 20, \$5.15; do., 20 x 28, \$9.90; Alyn, 14 x 20, \$5.25; do., 20 x 28, \$10.40; Wasters—S. T. P. grade, 14 x 20, \$4.60; do., 20 x 28, \$9; Abercarne grade, 14 x 20, \$4.50; do., 20 x 28, scarce.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, March 14, 1894.

Pig Tin prices have advanced sharply, and show a gain of £4. 5/ @ £4. 7/6 from the lowest quotations that were given early in the month, and quite a large business has been done at the advance. Speculation has figured conspicuously, and trade demand improved also. Quite large purchases reported for Continent and American account. Sellers for "short" account are very few at the present time. Importers offer reservedly. Consumers' purchases are said to have been large. At the close the market was very firm, with Straits quoted at £68. 7/6 for prompt delivery and £69. 5/ for three months' futures.

The recent break in Merchant Bar Copper to £40 for prompts was due to sales for account of an embarrassed firm of brokers. The air has since cleared, and improvement in silver along with better trade demand has caused holders to offer less freely. Good purchases were made for American account on the recovery. Toward the close the market flattened, the movement in silver causing a lull, but later on large buying by brokers and scarcity of sellers restored confidence, although little was done in G. M. B. To-day the market is steady, with quotations as follows: £41. 2/6 for Merchant Bar, prompts; £41. 12/6 for do., three months' futures, and £43 @ £43. 10/ for Best Selected English.

Tin Plate has undergone no decided change. Dealers are still waiting, but seem to be more hopeful. Some forward business has been done in 14 x 20 Bessemer Cokes at 10/, f.o.b. Swansea. Otherwise dealings confined to small limits. There is a fair demand for Black Plates. February exports were 23,000 tons, against 29,000 during corresponding month last year, including 13,000 tons and 20,000 tons respectively to the United States. Stocks at shipping points amount to 263,000 boxes. Liverpool prices are quoted as follows:

IC Charcoal, Alloway grade.....12/ @ 12.6
IC Bessemer Steel, Coke finish..... @ 10/6
IC Siemens.....11/ @
IC Coke, B. V. grade, 14 x 20.....Nominal.
Charcoal Terne, Dean grade.....10/ @ 10/6

Pig Lead has met with only moderate sale, and the market has shown no change in tone. Last sales were at about £9. 5/ for Soft Spanish.

Spelter has undergone no change the past week, the market being steady and quiet, with £15. 15/ the general price for ordinary Silesian.

In the Iron and Steel trades no important changes have taken place. Business is only fair and at about

former prices. Last sales of warrants were at 43/1 @ 43/2 for Scotch, 36/1 @ 36/3 for Cleveland and 45/1 @ 45/3 for Hematite.

OBITUARY.

JAMES H. McLAIN.

James H. McLain, president of the J. H. McLain Machine Company of Canton, Ohio, died at his residence in Massilon, Ohio, on Friday, the 9th inst. Mr. McLain was prominently identified with other interests in Canton and Massilon.

LORENZ BOMMER.

Lorenz Bommer, long a resident of Brooklyn, died March 5, aged 71 years. He was best known as a manufacturer of spring hinges, having started for himself in 1876. Previous to that time he was in the employ of Van Wagoner & Williams. He is credited with having introduced many improvements, both in principle and method of manufacturer, thus reducing the cost and allowing of their more general use.

T. R. Thomas, secretary of the Laughlin Nail Company of Wheeling, W. Va., died on the 4th inst. of pneumonia, after a very short illness.

PERSONAL.

M. M. Garland, president of the Amalgamated Association of the Iron and Steel Workers, returned to Pittsburgh last week from a Western trip in the interests of that organization.

Robert M. Thompson of New York has gone abroad.

A. R. Whitney of New York is in Florida.

The Metal Schedule and the Senate Finance Committee.

The majority of the Senate Finance Committee has submitted its modifications of the Wilson bill, a number of changes having been made in the metal schedule. It changes the date on which the act is to go into effect from June 1 to June 30, 1894. We tabulate below the modifications made:

	Wilson bill.	Senate Finance Committee bill.
Iron ore.....	Free.	40¢ per ton.
Pig iron.....	20 per cent.	22½ per cent.
Iron slabs, blooms and loops.....	22½ per cent.	25 per cent.
Bars.....	25 per cent.	28 per cent.
Beams, girders, angles, channels, tees, columns, &c.....	30 per cent.	3½ per cent.
Forgings.....	25 per cent.	30 per cent.
Hoops.....	25 per cent.	30 per cent.
Rails.....	20 per cent.	22½ per cent.
Tubes and pipe.....	25 per cent.	20 per cent.*
Cast iron pipe.....	25 per cent.	20 per cent.*
Screws, wood.....	35 per cent.	30 per cent.*
Lead in ore.....	15 per cent.	¾¢ per pound
All manufactures not specially provided for.....	35 per cent.	30 per cent.*

* A reduction in the rate.

In the sheet iron and tin plate schedule the provision is stricken out which made the proposed duty effective on October 1, 1894. In other words, it goes into effect with the general bill on June 30, 1894.

Bituminous coal is placed at 40 cents, slack at 15 cents per ton and coke at 15 per cent. ad valorem. Zinc oxide is advanced from 20 to 25 per cent. Grindstones are changed from

\$1.75 per ton to 10 per cent., and emery from 1 cent per pound to 20 per cent. ad valorem. Gunpowder is changed from 5 cents per pound on powder valued at 20 cents or less and from 8 cents per pound on value above 20 cents to the general ad valorem rate of 10 per cent.

Arthur L. Reese, chief electrician of the Maryland Steel Company, Sparrow's Point, Md., was accidentally killed on March 12, while preparing some electrical apparatus for use in a lecture on electricity that evening.

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HARDWARE.

Condition of Trade.

MARCH BUSINESS continues in fair, but moderate volume, trade being somewhat uneven in different parts of the country and for different lines of goods. In general terms business in the East and in the Southwest is probably better than in the West or Northwest, or on the Pacific Coast. The jobbing trade are not buying freely at the present time, having sufficient stock for their immediate requirements. Current orders are received principally from the smaller buyers who are getting their assortments in shape for spring business, a matter which many of them deferred until a later day than usual. It is also noticeable that orders are increasing in frequency and are for smaller quantities than the houses have been in the habit of buying. Manufacturers, also, are receiving a good many inquiries from parties who have heretofore bought chiefly from the jobbing trade, and there is a disposition in some staple lines to give the retail merchants relatively closer prices than has been the case. This comes from the solicitude of manufacturers to secure whatever orders are going. Advices from different parts of the country indicate that there is a tendency toward cutting of prices by the jobbers; and this fact, with the concessions which are being made by some manufacturers, tends to give some irregularity to current quotations. The tone of the market is thus not entirely satisfactory and far from strong. There are, however, comparatively few quotable changes. The trade at large are pursuing a very conservative course in the matter of purchases, and it will be the part of wisdom for manufacturers to refrain from forcing their goods on the market at unremunerative prices. With the opening of spring a quickening in the demand is anticipated, and there is at the present time a fair activity in seasonable goods. The financial conditions on the whole are quite satisfactory, and collections, though sluggish, give comparatively little reason for complaint.

Chicago.

(By Telegraph.)

Shelf Hardware maintains its appearance of activity and further gains are reported in the volume of business. Despite the improvement, however, it is not expected that the trade of this spring will rival the record of past seasons. The gap is too large to be overcome. Staple goods are quiet and straight Hardware is not moving sufficiently well to compensate for the lack of business during the early months of the year. Tinware and House Furnishing Goods are in considerably better demand, but the country merchants continue to buy broken packages which entail very much work in making up shipments. A somewhat improved demand is noted in Roofing Plates. American brands are taking the lead in this direction, and the prediction is quite freely made that imported plates will not control any considerable part of this territory in three or four months. The heavy Hardware trade shows decided improvement. The demand comes from all classes of manufacturing consumers, except the carriage builders, although some contracts are now being made for future delivery to a few establishments. Collections are improving.

St. Louis.

(By Telegraph.)

Hardware jobbers report a quiet trade, especially from the West. The Southern trade is beginning to open up, and prospects are quite favorable for a heavy trade from this section. Reports indicate that stocks in that section are lighter than for years past and that dealers, as a rule, are in better condition financially than they have been for some time. Texas trade is particularly heavy and promises to remain so. Prices continue to rule low, and it is difficult to name any line of goods, with the exception of one or two, that are not lower than they were 30 days ago. The pleasant weather which has prevailed for the past two weeks has had an excellent effect on Builders' Hardware and Supplies. Sheet Iron for roofing has had a spurt during the past ten days, and Galvanized Iron is also active, but at extraordinarily low prices, as low as 75 and two 10s having been made. Barb Wire is firmly held, but Wire Nails are weak.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—The conditions prevailing at our last writing are practically unchanged. Orders from the country are coming in, but for limited quantities. Whether

they are waiting for tariff developments and settlement of the silver question does not appear, but it is evident that in the estimation of interior merchants the time for stocking up is not yet. As spring advances, the indications of an abundant harvest become stronger and it is to be hoped that increasing confidence begotten thereby may bear fruit in increase of business.

Cleveland.

THE W. BINGHAM COMPANY.—Trade is moving along quietly, and there is but little to note in the way of change. Merchants are ordering season goods a little more freely, and the number of orders we are receiving, both through our salesmen and by mail, is larger than usual at this time of the year, but the quantities, of course, are smaller, the trade seeming to be very cautious as yet. If the Senate would only find out what it wants to do and then do it, it would have a good effect and the country would gain by it, no matter what the action might be; but in the present unsettled condition of affairs Hardware dealers are afraid to buy, not knowing what the goods will be worth when they put them into their stock. This applies more directly to staple goods, upon which we get the first inquiries in early spring. The country certainly needs Hardware, for stocks everywhere are light. We hope that with the opening of spring the trade will take heart and push business with more vigor. There is going to be a large amount of building done in this section, the low prices in wages and material offering extra inducements. There is a fair demand for Nails, and a very good demand at present for fence Wires, both barbed and plain.

Omaha.

LEE-CLARKE-ANDRESEN HARDWARE COMPANY.—After a period of continued depression, in which the persistent remark of the Hebrew house to its representative on the road, "Vat ve vant vas orders," exemplified the situation, the recent dormant conditions have developed into comparative activity. It had been expected that with the beginning of March the advent of milder weather with some spring sunshine would in a large measure stimulate and awaken the prevailing quietude. The first real throb of spring trade has been felt, and nearly all lines of business have experienced its influence in a greater or less degree. All kinds of seasonable Hardware, such as Hoes, Forks, Rakes, Screen Doors, Wire Cloth, &c., are moving in very respectable quantities, and as the season advances it is more than probable that an increased business will develop right along.

For some time past the leading Omaha jobbers have been working assiduously to divert business to this city, giving special attention to those country merchants who were disposed to patronize other markets. Their efforts in this direction have met with pronounced success. Within the past

few weeks many country dealers have personally visited this market, inspected stocks and placed their orders, and expressed their surprise and astonishment at the value and the extent of the stock of goods carried here, together with the unequalled facilities for the rapid handling of business, and have also expressed their assurances that the Omaha market is "good enough for them."

We have to record, too, a somewhat easier money market. Legitimate business enterprises find it less difficult to secure loans than formerly. Omaha bankers, being alive to the situation, do not propose to allow business to escape them to other centers, where it is probable more favorable accommodations might be secured. Collections may be reported as good and up to expectations.

New Orleans.

A. BALDWIN & Co.—Business has become exceedingly quiet in this section of the country; in fact, it is at a complete standstill, and from present indications we cannot expect any improvement for some little while. We have been having so much rain for the past three weeks that it is impossible for travelers to get around. Merchants coming to the city are not very plentiful, and there is not a single line that requires special mention.

The situation in the builders' line locally is affected by the same causes, and we are simply waiting for much better weather before we can look for any improvement in the situation.

Baltimore.

CARLIN & FULTON.—The history of the season's trade is being written in the acts of the present Congress, uncertain, changing, spasmodic and disappointing, and no predictions as to the future can be made with any accuracy as long as legislation is for party advantage instead of for principle.

The multiplicity and variety of interests of this immense domain, stretching from ocean to ocean, with a population devoted to agriculture, to manufacture and to commerce, seem beyond the ability and comprehension of any political party to deal with intelligently, impartially and in a manner devoid of partisanship and sectionalism, and inasmuch as the great economic questions of the day in their issues affect every individual citizen in the land, whether Democrat, Republican or Populist, it is time that their solution be taken out of the halls of Congress, away from the political demagogue, from the enthusiast and the theorist, and given to those who can bring to the consideration of such matters the advantages of study, of wisdom, of experience and of integrity, and whose opinions and decisions should be above the reproach of personal interest in the results therefrom.

If the business interests of the country require a commission for its interstate commerce, and equity and public policy require also a commission for the civil service, and questions of international concern are arbitrated and decided by commissions, why should not the tariff, which is a question of equal importance with any, be in the hands of a commission whose learning, whose impartiality and whose ability should be equal to that of the Supreme Court of the United States, and whose term of office should not be coincident with or dependent upon any political party?

Conceding to our national legislators all honesty of purpose and conscientiousness in their efforts, how many are really calculated by age, by study, by experience in public life, to decide upon the important questions of finance and commerce? A large number of our Representatives come to the seat of government, many of them for the first time in their lives, all filled with patriotic sentiments, but in many cases with opinions formed or influenced by their narrow surroundings, and yet are expected to vote intelligently upon questions whose interests are world wide. How much better would it be instead of having either tariff reform or protection the shibboleth of a political party, to have these matters presented before a high court or a commission and passed upon as any question of equity or law?

After the Wilson bill had been debated in the House of Representatives and discussed pro and con in the daily press of the whole country, and with all its features known just as well to the Senate as to the House, what necessity was there for its consignment to a sub-committee; then for its report to the Finance Committee, and after that a report to be made to the Senate, and then, like a football, to be kicked to the House, in order that it might be talked and wrangled over for six months more, to the utter prostration of all business during the next season, as is the case to-day?

Have the eyes and the ears of the Senate been closed during the long debate in the House and suddenly opened to the consideration of the bill as though it were new business, unheard of before? Are they any better prepared to accept or reject it to-day than when it was first presented for consideration? The country wants action at once, and, as upon the Silver bill, a vote and not talk.

Last week, upon the introduction of the Bland seigniorage bill in the Senate, we heard one of the silver Senators argue that the depression in business in this country was not on account of the tariff agitation, but was coincident with the world wide stagnation of trade in countries affected by the demonetization of silver, and argued that the great accumulation of money in the cities of London, Paris and New York did not prove that there was a circulating medium sufficient for the wants of trade, but merely that there was enough for business as it is to-day and far from enough for it as trade should be or had been not so long ago. Is it surprising that business should be in its present condition, when for the sake of a mere parliamentary advantage (which proved only temporary) such sophistry should be advanced as an argument in favor of silver inflation, of which the country had a surfeit last summer and fall?

These topics seem foreign to Hardware, but until Congress adjourns we will have little else to write about and we will welcome the day when our Representatives can draw their mileage, and without fear of the Speaker and Sergeant-at-arms retire to their homes undisturbed by roll calls and the necessities of quorums.

Notes on Prices.

Wire Nails.—The Wire Nail market continues in the improved condition which has characterized it for the past few weeks. Prices are well maintained on a basis of \$1.10 for carload lots, f.o.b. mill, and it is only in very exceptional cases where the orders are particularly large and attractive that this figure is shaded, and a slightly

higher price is in many cases asked by some of the manufacturers. The mills are fully occupied with orders, and the current demand is sufficient to absorb their production, thus preventing an accumulation of stock.

Chicago, by Telegraph.—The local Wire Nail trade is affected to some extent by the reduced freight rates from Eastern factories. An equivalent concession is being made on factory lots, which brings the prices here to about \$1.15. The price at factory is maintained, as the makers are still crowded with business and it will take sometime for them to work off their orders. The demand continues fair from factory, but jobbers report some falling off in the demand from the retail trade. Small lots from stock are held at \$1.25.

Cut Nails.—The demand for Cut Nails is fair, but not heavy, and the market is in substantially the same condition as last week, being characterized by not quite so strong a tone as for the past month or two. The following quotations are for carload lots delivered at the points named: New York, \$1.05; Albany, \$1.05; Buffalo, \$1.02; Harrisburg, \$1; Philadelphia, \$1; Boston, \$1.05, and Savannah, \$1.05. It is understood, however, that slight concessions are in special cases made from these figures. The price from store in New York is \$1.15.

Chicago, by Telegraph.—Manufacturers of Cut Steel Nails report this month the best for a long time. Orders are larger and specifications are being freely made, so that shipments correspond well with order books. An encouraging feature of this trade is the continued demand from localities and dealers who have not for some time been taking Cut Nails, but whose trade has been given almost entirely to Wire Nails. One of the leading manufacturers now asserts that Cut Nails have seen their worst day. Prices are unchanged at \$1.05, Chicago, for factory lots, 60 cents average. Small lots from stock are selling at \$1.15.

Barb Wire.—Manufacturers of Barb Wire report an excellent demand, somewhat in excess of their expectations, and the mills generally are fully occupied on orders. The market is also in a very satisfactory condition as regards prices, which are steadily maintained on the following basis: Carload lots of Galvanized Four-Point, Pittsburgh, \$2 15; Cleveland, \$2 20; Cincinnati or Allentown, \$2.25; Chicago or New York, \$2.35, with an advance of 5 cents per 100 pounds in less than carload lots.

Chicago, by Telegraph.—The Barb Wire trade steadily improves. Manufacturers are in receipt of continued orders from jobbers in various localities, and jobbers also report a fair demand from their customers. There is, however, less apprehension of an advance in prices, but values will probably remain at about their present level. Car-

load lots of Galvanized Barb Wire are selling at \$2.30, and small lots from stock at \$2.40.

Roller Staple.—The I X L Wire Fence Roller Staple, manufactured by O. P. Schriver & Co., Cincinnati, Ohio, an illustrated description of which appeared in *The Iron Age* March 8, 1894, is sold at \$1.50 per hundred.

Glass.—The local Glass market shows no improvement either in demand or prices over that reported in our last week's issue. Reports from Pittsburgh indicate somewhat of an encouraged feeling among manufacturers, with slightly higher quotations for small quantities. It is not believed that the new tariff measure will become a law in time to affect the price of Glass made during the present blast, and this leads some to hope for an increase in price of Glass in the near future. It is understood that the Senate bill increases the duty on Glass about 12 per cent. above that proposed in the bill reported by the House. The American Window Glass market is represented in New York by quotations of 85 and 5 per cent. discount for single, and 85 and 10 per cent. discount for double. Pittsburgh quotations are reported as 85 and 10 and 5 per cent. discount for single and 85 and 20 per cent. for double strength Glass. An increase in capacity equivalent to 32 pots is noted during the past week. While no advance in the price of Plate Glass is reported, additional factories are making preparations to resume in the near future.

New England Iron and Hardware Association's Dinner.

THE ANNUAL DINNER of the New England Iron and Hardware Association was held in Boston on Tuesday evening, March 13. The Parker House was the scene of the dinner, which was a complete success. About 100 persons were present, the trade of the New England States being largely represented. Philadelphia and New York manufacturers were also prominent in the gathering. Addresses were made by the following gentlemen, whose remarks were greeted with much enthusiasm and applause:

Hon. Fred. T. Greenhalge, Governor of Massachusetts; E. Benjamin Andrews, President of Brown University; Hon. John A. Lane, President of Boston Merchants' Association; Hon. J. B. Sargent, Mayor of New Haven, Conn.; Wm. H. Williams, President of New York Hardware Club; R. R. Williams, Hardware Editor of *The Iron Age*; Gen. Charles H. Taylor, *Boston Daily Globe*; Curtis Guild, Jr., *Commercial Bulletin*; Rev. Wm. H. Bolster, Harvard Congregational Church, Dorchester; Henry A. Thomas, Private Secretary to the Governor.

Samuel A. Bigelow of the Bigelow & Dowse Company, gracefully presided at the dinner, Charles C. Adams acting efficiently as toast master. A full re-

port of the dinner will appear in our next issue, when we shall take pleasure in laying before the trade the interesting addresses which were made on the occasion.

A New Hardware Association in Canada.

THE MEMBERS of the Hardware and Metal trades of Montreal have recently perfected an organization under the style of the Metal and Hardware Association. The association has started out with a strong membership, which includes, we are advised, all the leading Montreal firms in the lines mentioned, and it is confidently expected that it will prove a success in every way. The officers of the association are James Crathern of Crathern & Caverhill, president; Thomas J. Drummond of Drummond, McCall & Co., vice-president, and J. B. Learmont of Caverhill, Learmont & Co., treasurer. The Executive Committee consists of these gentlemen and the following: A. C. Leslie, James Phymister, Wm. McMaster and Fred. Fairman.

In organizing this association the fact was recognized that there are a great many questions, financial and otherwise, which affect the Hardware and Metal trades, and that while something can be done by individuals, a great deal more can be accomplished by an organization, so that acting as a body the interests of the trade are guarded and promoted in a more satisfactory and advantageous manner. This was one of the principal reasons for the formation of the association. Another reason was the desirability of endeavoring to have the Metal and Hardware men of all branches come on "change" daily between 12 and 1 o'clock.

The association proposes to begin its work with a special day on "change" every week, the day selected being Wednesday, between 12.30 and 1 o'clock. An effort will also be made to have the members, as far as possible, come on daily at the same hour. Such meetings will not only facilitate business, but they will make the different members of the trade acquainted with each other, a much desired condition. A brotherly feeling among the trade will thus be created, which will undoubtedly have a beneficial effect.

The association has been drawn up on the broad principle of taking in all doing business in wholesale Shelf and Heavy Hardware, or any agents for Canadian or foreign manufacturers of these goods, as well as manufacturers of pig iron, all rolling mills, iron foundries and iron workers, and any person or firm doing business in these lines in any part of the Dominion of Canada is eligible for membership.

THE TRADE WILL OBSERVE in this issue the two advertisements of the Bromwell Brush & Wire Goods Company, Cincinnati, Ohio, in one of which they illustrate their Paragon Fly Trap, the other calling attention to their Shoe Brushes, the construction and reasonable price of which are referred to.

Annual Meeting of The Hardware Club.

AS ANNOUNCED in our last issue the annual meeting of the Hardware Club of this city will be held next Saturday, March 17. The meeting will be called to order at 3 o'clock, in the parlors of the Cosmopolitan Hotel, corner Chambers street and West Broadway. The principal business of the meeting will be the election of five governors to succeed those whose terms expire on that date. It is hoped that a large representation of the members of the club will be in attendance.

Traveling Salesmen.

IN REGARD to the feasibility of marketing goods without traveling salesmen, a subject which was discussed by one of our correspondents in a recent issue, we have the following communication from a well-known house in the West. They also touch upon the wisdom that should be shown by travelers in promoting their employers' interests in selling at remunerative prices:

I note your correspondent's remarks in *The Iron Age*, March 1, in reference to marketing goods without traveling salesmen. This custom can never become general, and I might say, can never be made profitable to the concerns who adopt it. A specialty, after once introduced by traveling men, might be kept before the trade for a season in this way, but the demand created by the persistent traveler would soon die out if not kept alive by constant presentation.

In this connection, a word to the ambitious traveling man might not be out of place; and being an employer of some 20 or more, we speak with due respect for them when we say they alone are responsible for the fact that their employers find it necessary, in some instances, to dispense with their services and go direct to the trade. This state of affairs has been brought about to a large degree by the unnecessary cutting of prices by a class of travelers who, in most cases, should have found employment on the farm or in the workshop. The intelligent traveling man uses his tongue instead of the knife, and as a result his position is one much sought after by persons wholly unfit for such important positions. If manufacturers and jobbers will instruct their representatives carefully before sending them out, and then see that a fair margin is made over and above the cost of doing business, we think the result will soon be apparent. The great trouble is, traveling men do not realize the enormous expense that is incurred in carrying on a business, and are allowed by their principals to make margins of profits that in reality do not cover cost of selling the goods. Intelligent traveling men will be thoughtful upon this subject, and others should be, for their own if not for their employers' interest.

AVERY STAMPING COMPANY, Cleveland, Ohio, announce that their works are now in full operation. They state that they are prepared to name prices upon Steel Hollow Ware, Pressed Steel Seats, Washers and all kinds of light and heavy metal stamping and shearing of Steel Plates to pattern, such as Circles, &c.

Prize Competition.

Bicycles in the Retail Hardware Store.

SECOND ARTICLE.

BY H. C. WISEMAN.

IT WAS A HAPPY THOUGHT for the maker of Bicycles to whom first came the association of the building up of his trade through the medium of the regular Hardware dealer. He continues the happiness of it, insists on it, demands it, pleads for it and gets it; and all this for the very many good reasons he offers. He insists the profits are large, the expenses are small. They are neither. That the trade is elevating, that it associates with and sells other lines—which is a matter of question—and he keeps it set up in stereotype that “there is a marked tendency to deal directly with the retail Hardware trade instead of with agents; and this, it is believed, will be beneficial to both maker and dealer” at so much a line or so much an inch each insertion, and we cannot blame him. We sincerely believe it belongs to

Sporting Goods and Agencies,

but even if Hardware is not the proper place to put the line, what branch of trade gives him such safety in his sales? Where else will he find such salesmen, such hustlers, such lovers of the competition that never lets go until the goods are sold? His reasons are golden ones, his arguments are lined with silver for the Bicycle man. He says: “The sale of a carload of Nails won't make the profit that comes from the sale of a wheel.” No and yes. We will point out what we think his error, in looking at both sides, later on.

As a stock of Hardware,

are they desirable? There are many arguments for and against, and we feel and have felt that more can be said to keep them out than to bring them in. With no prejudices whatever, with a love for the sport of riding, but looking at it entirely from a business standpoint, we ask and try to answer the question. As a department in connection with Hardware, the handling of them may be desirable, practical and profitable. A department separate and alone it should most certainly be. It differs from a great many side lines, or departments, in that it requires considerable capital, plenty of floor room, very clever salesmen, a full stock of sundries and extras, a repair department well kept up, a club and a league membership, and, almost of a necessity, an expert rider—all these to be at the top round of the ladder. It has come into the Hardware trade through the most strenuous efforts of makers and large jobbers, and through the filling up of regular lines of agencies, consequent on an enormous increase of production in new lines of wheels.

Experience

in any line is a teacher better paid than any other, and retail dealers in Hardware will bear me out in their results to the present time, when making the assertion that four out of five of them have no profit to show on the right side of their balance sheet, taking the sum total of each year's business and looking at it squarely as their other lines.

Like the man with the Nails, the profit on a carload is \$25. The profit on a high grade machine may be \$27, and there you are—i. e., if you could stand on an empty keg in the highway and make the sale of both—and exclaim with a mutilated Ingersolism, “That ends all.” When we estimate interest on the investment, cost of good advertising, shortness of time allowed the dealer in buying, the length of time to purchaser in selling, repairs and time and labor lost at them, the rent account, time lost that will sell other goods, wheels sold on mortgage settlements and taken back as second hand for default of payments, express and freight charges back and forth to factory, the small amount of profit allowed, the sacrificing a part of that to make the sale; and more than all, again, the time put on it by two or three good men, whose efforts on regular goods should have sold almost hundreds of dollars in good, profitable Hardware. All these, to the writer, seem to be strong trade reasons why a man with a good retail business cannot afford fellowship even with the best of the Bicycle interests.

If Already in the Trade

to stay, stay there, and work it as hard as you do other lines; you will probably work it a good deal harder if you make it a success. We suggest that stocks be not too large, and the assortment be good, that at least two lines of high grade be carried, and with them a fair stock of medium and low priced wheels. We feel it is not wisdom to stay entirely by one best wheel. Some day, for some reason you will not know, the maker may want to change, and you as a dealer are left without any; with all your work at advertising, soliciting and gathering together your trade to go through with again. For your own good, use all the room you can possibly spare without robbing your other business. Either make or buy a good stand for each individual wheel; keep them bright and clean; like all other goods they sell best when gotten ready for sale; never let even a muddy, second-hand wheel stand for a day uncleaned among your other stock. It is like bringing a traveled, done up horse to a sales stable, expecting to get a price for him. Use your show windows, your printed matter, and better than all, use your friends who use your wheels. Advertise, and advertise constantly, in thorough, earnest manner; never mention your competitor or his line—you are selling your own. You cannot be half in it to be successful, and assug-

gested before, if it is possible to make it a separate department, you will certainly be more successful.

Repairs and Repair Room.

With such sales as make your business even fairly successful, you must have a repair department, and some one who is mechanic enough to put into it. The business can be done in a way without it, but the man who has it and takes care of his machines is the man who sells the goods. It would seem to the writer that a man might as well expect to run a wagon shop, a gun store, or a sewing machine agency, and not be able to do for them afterward, as to sell Bicycles and ignore the repairs. It is not a money making part of the business, but if some one else repairs your machines, some one else will sell also them before long. We think it all goes together, the one a necessary part of the other.

Sundries and Extras

ought to make a good part of whatever profit is made in the business. Unless, like the stove man, you keep adding them piece by piece until they are all a part of the machine in the sale of it. But there are always extras and extras, and new things coming in. We suggest that for the increase of the business, this portion have particular attention. It is these things that cause your wheel customers to stop and look, to come in and to examine.

You must expect Bicyclists to congregate in your place of business. Some of them will be loafers, some will be buyers, and you must have both to have one, and now,

In a General Way,

if the trade must be a part of the retail Hardware business, do the best you can for it, make it go as you do other lines; and while we personally know of dealers (Hardwaremen) who have sold from 40 to 50 machines in a season and count they have made no profit, the fault may be their own. At any rate they claim to have advertised and to have the trade. The writer lives in a good manufacturing town where the trade is confined almost entirely to the agencies and Sporting Goods lines, and it is the best Bicycle town in the State.

Arcade File Works.

THE ARCADE FILE WORKS have decided to enlarge their already extensive plant at Anderson, Ind., and a contract has been awarded for the erection of a building 250 x 40 feet. The building will be of brick, stone and slate, and when completed will be equipped with new machinery, the patents on which are controlled by the company. We are advised that some of the Files produced by the improved machinery recently invented by Mr. Weed, the vice-president and general manager of the company, have been subjected to test in several large machine shops with most gratifying results. With the new ma-

chinery and the even heat of natural gas the company expect in the future to turn out an even better File than in the past.

Hardware in South Africa.

LETTER FROM

POLHEMUS LYON,

Our Special Foreign Representative.

CAPE TOWN, February 7, 1894.

Well! I have spent a month at Johannesburg, another wonderful city of a day, for eight years ago it was a poor farm and to-day has a population of 40,000 white people, fine blocks of buildings, streets, hotels and club houses illuminated with electric light, &c., all due to the constantly increasing output of gold, which is not less than \$3,000,000 per month.

There are four or five stocks of Hardware in that city, none of which will run less than \$200,000, and there are three first-class machinery and supply concerns, all of whom are getting to carry an increasing assortment of American lines.

The South African custom is for a large concern at the port to have a number of branch houses owned entirely by them at the different centers, so that a large proportion of the Johannesburg houses are also at either Cape Town, Port Elizabeth or Durban, which enables them to buy largely for their several stocks.

There seems to be no prospect of a diminution of the gold supply, and were it not for the predominance of the Dutch element in the Transvaal we could well believe in a much greater future for this center. But it has grown in spite of the Dutch and against every obstacle they have put in the way.

Now that Mashonaland and Matabeleland are opening up, Johannesburg will get considerable business in supplying the new country, and there is quite a stir this year in the several parliaments about additional railroads, while the Cape papers devote editorials to questioning how the country is going to take care of the greatly increased immigration; a very useless burden it seems to us for them to carry, for as the Dutch are being gradually submerged by the more enterprising and prosperous English colonists new fields are constantly opening up which will surely lead to success.

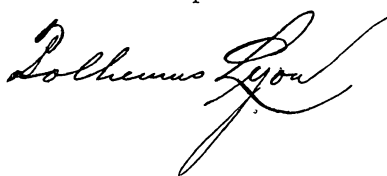
I visited Kimberly, the great diamond center, which, since this industry has become one huge monopoly, has dwindled from a population of nearly 20,000 to about 4000 whites.

The customs' returns month by month show an ever increasing importation, though the trade seem to feel that this has been done up to the limit.

There are quite a large number of Americans in Johannesburg, which creates a demand for American tools that do not sell so well in other parts of the country. Several times did buyers say to me that they had to keep such and such lines from the States,

since they had American customers who demanded them, all of which I did not object to.

The buyers out here are most terribly conservative people, and require a great deal of pegging away at them with repeated visits to accomplish very much. When I twitted one merchant to the effect that he didn't care much for 10 per cent., he answered that really he didn't know that he did; it would be hard to see it when the goods were landed in his place. This does discourage a fellow, but the trade is worth having and is worth fighting for in spite of all this. However, it is an expensive luxury to work this country with samples, since with all my experience in different parts of the world I have never had to pay such high rates as here, together with \$100 licenses at several points.



Huntington-Hopkins Company Retire.

THE OLD ESTABLISHED Hardware business of Huntington-Hopkins Company, San Francisco, Cal., has been transferred in its entirety—stock, good will, fixtures, &c.—to the corporation of Miller, Sloss & Scott, who began their mercantile existence in 1891. Rumors of a change have been current for some months, but pending negotiations took definite shape soon after the arrival of Charles Miller, vice-president of the Huntington-Hopkins Company, from the East late in February, culminating in a contract, March 1, by which the purchasing company acquired the business, together with a lease of the premises for a term of years. Miller, Sloss & Scott, who were in full possession of the quarters lately occupied by Huntington-Hopkins Company March 1, expect to vacate their own store, at Pine and Front streets, by April 1. No change whatever has been made by Miller, Sloss & Scott in the personnel or capital of their company. The buildings they are about to move into have a frontage of 90 feet on Fremont street and 137½ feet on First street. The building on Fremont street is of recent construction, built especially for the purpose to which it has been put.

In 1854 C. P. Huntington and Mark Hopkins formed a copartnership in Sacramento, doing a business described by C. P. Huntington as "Hardware, railroad building and various other enterprises." In 1868 Charles Miller, who for seven years previously had been the cashier of C. G. Hooker & Co., with Albert Gallatin, W. R. S. Foye and H. H. Seaton, joined Huntington & Hopkins, the title changing to Huntington, Hopkins & Co. In 1869 Russell & Erwin Mfg. Company, New York, sold their branch San Francisco business to Huntington, Hopkins & Co. The building now at Fremont and First streets was built in 1888, some time after Mark Hopkins died. Before this, however, the interests of Mark Hopkins and H. H. Seaton had been purchased and the firm incorporated as Huntington-Hopkins Com-

pany. Collis P. Huntington, the well-known railroad and steamship magnate, still had an interest, but took no active part in the management. Three years ago Miller, Sloss & Scott bought the Sacramento stock. Charles Miller is president of the Phoenix Horse Shoe Company, Poughkeepsie, N. Y., and Joliet, Ill. W. R. S. Foye is in ill health, while Albert Gallatin decided he has been in business long enough. It will be seen from the above statement regarding the four stockholders of the Huntington-Hopkins Company that there were good reasons for winding up the affairs of this old concern.

Miller, Sloss & Scott began business three years ago. The leading stockholders are Charles E. Miller, president; A. W. Milligan, New York, vice-president; Joseph Sloss, secretary and treasurer, and Leon Sloss and John A. Scott and A. L. Scott, nephews of Irving M. Scott of the Union Iron Works, San Francisco.

Export Notes.

D. L. STEVENS, formerly of the firm of Stevens, Corwin & Co., and until February 1 with W. R. Grace & Co. of this city, has connected himself with Hemenway & Browne, 45-47 Cedar street, New York. This concern, the oldest in the United States doing a West Coast South American export and import business, were established in 1825. Mr. Stevens, who in years gone by has spent much time in the various countries with which this house do business, will be in charge of the export department, more especially in manufactured lines.

Wm. E. Peck & Co., exporters, 62-64 William street, New York, have engaged the services of Julian McGroarty, who sailed March 14 on the "Manitoba" for River Plate ports. For four years he represented English and Continental manufacturers in a portion of the territory he is about to visit, with headquarters at Buenos Ayres, as resident agent. He will see the merchants in Montevideo, Buenos Ayres, Rosario and Mendoza, crossing the continent into Chili by the transandine route, and co-operating with Wm. E. Peck & Co.'s agent in Valparaiso, will continue his trip up the West Coast of South America, and return to New York via the Isthmus.

A. M. Grundy of Opp & Grundy, 15 Whitehall street, this city, will leave New York late in April for a two-years' trip through South Africa and Australia. He will represent through his house a number of well-known American manufacturers in those markets, in Hardware and related lines. Stopping first at Cape Town he will see the trade in the various colonies, establishing a branch either at Cape Town or Durban. After a year in South Africa he will proceed to Australia and spend the balance of the time.

T. F. Curley of J. Curley & Bro., Cutlery, 6 Warren street, New York, will leave here April 7, on the "Saale," for a two-months' trip in Europe. Although this house import largely

Cutlery and allied goods, one of the principal reasons for going is the opening of a larger market for their Reversible Guard Safety Razor, manufactured here. These Razors are already exported to some extent to England, France, Australia and various South American centers. Mr. Curley will arrange while in Europe for a larger distribution of this article.

W. R. Grace & Co., Hanover Square, New York, with the departure of the steamer "Cacique" on her maiden voyage, now have in operation their full line of steamers operating back and forth between New York and west coast South American ports. This line now consists of the "Coya," "Capac," "Condor," and "Cacique," the three latter having been built in Sutherland, England, during the past year especially for this service. These vessels carry American products to South American Pacific Coast ports, among which are Talcahuano, Valparaiso, Antofagasta, Iquique, Arica, Mollendo, Callao, Pimentel and Guayaquil, as well as other ports as occasion offers. On the voyage out they call at the different ports along the coast distributing cargo. Returning they load from the same ports nitrates, guano, manganese, wool, cotton, hides, cocoa leaves, quillay bark, &c., for New York. This is the first regular steamer service from New York to the Pacific bringing return cargos here.

Aluminum Products.

THE WOHLER ALUMINUM COMPANY, 55 Jackson street, Chicago, issue a 28-page catalogue, giving full particulars of the great variety of aluminum manufactures now offered by the company, who are representatives of the Pittsburgh Reduction Company, Western agents and distributors for a great many producers of aluminum goods, and also manufacturers of the metal in some special lines. They offer Ingot Aluminum, Castings, Plates and Sheets; Seamless Tubing, Bars, Angles, Channels, Beams, Tees, Rods, Wire, Leaf, Foil and Bronze Powder. Tables of gauges, weights and dimensions are given whenever such particulars are desirable. A considerable part of the catalogue is devoted to aluminum cooking utensils, which resemble silver in appearance, are made of the solid metal, have no enamel, and are claimed to be practically indestructible. The line of these wares which are offered covers Saucepans, either bailed or handled, Fry Pans, Bake Pans, Wash Bowls, Dippers, Cups, Coffee Pots, Tea Pots, Hotel Stewpans, &c. The company are about to put on the market a full line of Spoons, which will closely resemble sterling silver, being composed of aluminum mixed with a sufficient quantity of silver and other high priced metals to make a combination of sufficient density or hardness to be suitable for table ware. The catalogue further contains a comprehensive list of novelties, fancy goods and specialties in aluminum, including jewelry.

A Montreal Hockey Match.

THE CHAMPION Hardware Hockey Team of Caverhill, Learmont & Co., Montreal, played a final match game the evening of March

2, on the Victoria Rink, in that city. Their opponents were a team from one of the largest millinery houses in Montreal. The champions won the match by a score of ten games to one. Both firms and staffs, with their women friends, were spectators, showing the interest taken in the event by the wholesale houses. A photograph of the eight members of the champion team in hockey suits represents a fine looking set of young men, of whom the Hardware trade of Montreal may be proud.

Fifty Years a Merchant.

ON March 1 William H. Barlow, Hardware merchant, of Sing Sing, N. Y., completed the fiftieth year of his connection with that business. To signalize the event Mr. Barlow gave a supper in the evening to his employees and a few invited guests. On behalf of the employees Mr. Barlow was presented with an elegant gold headed ebony cane, his initials being engraved on the handle. During the evening Mr. Barlow made an interesting address, in the course of which he narrated the history of the business. From this address we take pleasure in making the following extracts:

One man in the shop was able to make all the Tinware sold and do all the work outside, with the help of a boy. I went in the shop to learn the trade, but I was the boy of all work. I opened and closed the store, was clerk, helper in the shop and stove blacker. For four years I did this kind of work for the munificent salary of \$30 a year and board. In 1852 I bought out Mr. Jarvis' interest, when the firm became J. Barlow & Son.

What a difference in the trade today in this place compared to 50 years ago! Then two tin shops with one man each were able to do all the work and make all the Tinware sold. There was no machinery used for making Tinware at that time. Now we have in this place seven tin shops. There was no plumbing, gas or steam fitting done then, as there was no one competent to do it, and there were no hot air heaters used; mostly wood Stoves were in use. Now we have men competent to do any kind of heater or tin work, also plumbing and steam fitting.

What a change in the Hardware trade since 1844! Then all the Hardware sold was imported, excepting Cut Nails; all Wrought and Horse-shoe Nails were imported. All the wholesale Hardware stores in New York City were below Wall street, in Pearl. The first American Hardware I remember being made in this country was Door Locks, which were made in the prison here. All the Carpenter Tools used were of foreign make, now the United States send immense quantities of Hardware to England, and in Saws and Edge Tools we can beat the world.

Bigelow & Dowse Company's Catalogues.

BIGELOW & DOWSE COMPANY, Boston, Mass., issue under separate covers artistic catalogues devoted to Cutlery, Hardware and Bicycles. The catalogues are of uniform size, handsomely printed on a fine quality of paper, the goods to which the books refer being fully shown by illustrations. The goods included in catalogue No. 1 are Carving Knives and Forks in cases, Carving Knives and Forks, B. & D. Razors, La Belle Pocket Knives, B. & D. Pocket Knives,

Scissors, Lamp Trimmers, Toilet Clippers, &c. No. 2, devoted to Hardware, shows Window Screens, Spring Hinges, Screen Doors, Braces, wrought steel Ball Casters, Lawn Mowers, Hoes, Forks, &c. Price-lis s are given of Wire and Steel Cut Nails, also tables showing the approximate number of Wire Nails to the pound. The Bicycle catalogue is devoted to a line of Sunol and Crawford high grade and juvenile Bicycles, for which the company are the New England agents.

Fair and Window Displays.

THERE is a noticeable increase in the interest taken by retail Hardware merchants in making displays at county fairs and in show windows. With the large variety of goods which are now at the command of the Hardware trade elaborate and attractive displays can be made, which will associate the enterprising merchant's name, in the mind of the public, with a desirable line of goods. Machinists' and Mechanics' Tools, fine Builders' Hardware, Piano and Banquet Lamps, Bicycles, Fishing Tackle, Sporting and Athletic Goods, &c., lend themselves to such displays with good effect. Surroundings of suitable design, combined with goods attractively arranged, add much to the effectiveness of the display.

We have already referred to several such displays, and are now in receipt of photographs taken by H. B. Wheeler, illustrating a display of Hardware and kindred goods, made by D. C. Wheeler, Erie, Pa., at the charity fair recently held in that city.

A canopy overhangs the display, with draped curtains in front, showing a number of the goods before referred to, arranged in an artistic and pleasing manner.

Farm Values.

WE ARE IN RECEIPT of a communication from a manufacturer in Ohio in which he refers in the following terms to the letter of the Supplee Hardware Company in our issue of March 1, taking exception to the statement in regard to the value of farm lands:

In the statement as published that "the farmer's plant (that is, his land) is constantly and yearly increasing and improving in value," he, your correspondent, is asserting something very far from the facts as they are to-day. In Ohio, Indiana and Michigan improved lands have fallen off in value almost constantly for the last ten years, and the end is not yet. Within the past few weeks farms have sold in this part of Ohio at less than 40 per cent. of the prices offered and refused for them from four to eight years ago. These may, of course, be somewhat extreme cases, but, unfortunately, they are not solitary nor isolated by any manner of means.

From my own observation and knowledge I believe that in the States mentioned above farms have decreased in actual money value from 20 per cent. to 50 per cent. in the few years past, and there are but very few evidences of any better conditions or prospects in the near future.

I have no reason to doubt your correspondent's statements of facts generally nor to mistrust his sources of information, neither do I wish to question the conclusions at which he arrives, but in this particular matter of farm values, as applied to this part of the United States, he is mistaken.

Bicycle Notes.

WE GIVE in this issue another article on the sale of Bicycles by the retail Hardware trade and commend it to those who are handling or thinking of handling this line of goods. Mr. Wiseman discusses the matter in a careful and conservative way, and doubtless voices the views of many Hardwaremen. Whether or not the merchant should enter on the sale of Bicycles is a question deserving of careful consideration, involving, as the business does, considerable outlay and being different in some respects from the regular old-time selling of Hardware. That there is in many places opportunity for the profitable handling of Bicycles by Hardware merchants will generally be admitted, and it is for each merchant to consider the question dispassionately as regards his own course in the matter. It is easy for him to make a mistake, either thoughtlessly or through undue conservatism, as in the one case he adds the new line without sufficient consideration and a reasonable confidence that it is best for him to do so, thus reaching hastily a decision of which he may repent at his leisure; or, on the other hand, refraining through prejudice or lack of enterprise from making this a new department of his business, thus losing opportunities of which more enterprising competitors will not be slow to avail themselves. Many of our correspondents refer to the sale of Bicycles as profitable and in all ways satisfactory to the Hardwaremen, and such enthusiastic views, should have due weight, but, at the same time, prudent business men will weigh the matter carefully and deliberately and will appreciate the spirit in which the question is treated in Mr. Wiseman's careful article.

A well-known house in Northern New York refer in the following terms to one of the principal difficulties in the way of the sale of Bicycles by Hardwaremen:

In this connection we beg to say that manufacturers have been so eager to sell their goods that they have appointed Tom, Dick and Harry for their agents, and owing to the number of manufacturers in the field at present, about every third person in the community is agent for some style of wheel. These agents do not pay rent, and in some instances have no financial responsibility, and successful dealers, who have to look out for store expenses, take care of their credit, and who are not in shape to spend the bigger part of their time on a wheel, cannot compete with these people in doing business, and so long as the manufacturers cater to this condition of affairs they will find the legitimate dealer reluctant to handle their goods.

The experience of a house located in a small town in Virginia is represented in the following extract from a recent letter:

While we do not handle a line of Builders' Hardware—only such goods as are used in housekeeping—we have added Bicycles to our stock. In 1893

we found it paid as well as any other line that we handled, and that it did not interfere with other lines, as it comes during the dull season.

E. C. STEARNS & Co., Syracuse, N. Y., have accepted Prof. R. H. Thurston, professor of mechanical engineering at Cornell University, as fifth judge in the challenge test relating to the strength of their Bicycle frames as compared with those of the St. Louis Refrigerator & Wooden Gutter Company, St. Louis, Mo.

UNION CYCLE MFG. COMPANY, 239 Columbus avenue, Boston, and Highlandville, Mass., issue a handsomely printed catalogue, showing the Union Q. T. weighing 26 pounds, listing \$125, and Union No. 3, for ladies, listing \$125. In the West, in addition to the above wheels, they will offer a specially designed machine known as the Western Union. The catalogue describes the machines in general, and also individual parts, with appropriate illustrations, including the frame, front fork, rear hub, tires, gearing, chain, wheel base, cranks, pedals, brake, &c. They will use on their machines the cemented double tube tire and also the detachable pattern, to suit the tastes of riders in different localities.

MONARCH CYCLE COMPANY, 42 to 52 North Halsted street, Chicago, issue a catalogue for 1894 which may be placed among the artistic catalogues brought out by manufacturing houses. It comprises 24 pages, and is a gem of typography and illustrated work. The wheels shown are the Monarch light roadster, Monarch roadster, Monarch special, Monarch racer and ladies' Monarch. These are all high class wheels, made, it is stated, of the highest quality of steel tubing and carefully finished in every respect. The bearings are all ball of the finest quality, both front and rear wheels and crank shaft bearings being fitted with Binn's patent ball holder and dust protector, used, it is pointed out, exclusively on Monarchs. It is explained that by this device the balls and ball race are kept free from dust and retain the oil, permitting the removal of cones without disturbing the balls, which is a very convenient feature. The light roadster weighs 30 pounds, the Monarch roadster 34 pounds, the special 25 pounds, the racer 22 pounds and the ladies' 33 pounds. A number of pages of the catalogue are devoted to special features of Monarch wheels, in which full particulars are given regarding the manufacture of the frames, the sprocket wheels are described, a device for locking the adjusting cone in connection with the crank shaft bearing is illustrated, the Binn's ball holder and dust protector is shown in all details, and other special points of these wheels are clearly brought out. The company call attention to the fact that although less than two years since the first Monarch was presented to the public there are over 6000 now in actual use.

ROOTS & Co., Indianapolis, Ind., issue a catalogue illustrating the 1894 design of the Lloyd Bicycle, also a line of medium grade machines, including the Direct, New Era, Flyer and Umpire. The company state that they have withdrawn their traveling agents, have canceled all advertising contracts with trade journals and propose to deduct the amount thus saved from the price of their wheel to the dealer. Special prices will be given by the company upon application.

KEATING WHEEL COMPANY, Holyoke, Mass., manufacturers of the Keating Bicycle, have recently reorganized

with increased capital and new management. Charles D. Rood, president of Hamilton Watch Company, Lancaster, Pa., has been elected treasurer of the Keating Company and is their recognized financial backer. E. P. Hadley has assumed the general management of the company. The works are running full at present and we are advised that the season's production of wheels is well sold in advance. Plans for greater manufacturing facilities are under consideration and the 1895 output is expected to largely exceed that of the present year.

THE WINTON BICYCLE COMPANY, Cleveland, Ohio, show a line of Winton machines, including roadster, Model A, weighing 39 to 35 pounds, listing \$110; light roadster, Model B, weighing 32 pounds, listing \$110; racer, Model C, wood rims, weighing 21 pounds, listing \$150; ladies', Model D, weighing 37 pounds, listing \$125; light roadster, Model E, weighing 25 pounds, listing \$125; full roadster, weighing 32 to 28 pounds, listing \$125, and high frame, special, Model G, weighing 26 pounds, listing \$125. Morgan & Wright, Gormully & Jeffery, and Palmer tires are used by the company.

Trade Items.

THE STANDARD MFG. COMPANY, Hartford, Conn., have recently begun the manufacture of Machine Screws for electrical and bicycle work, and Studs for steam engines, pumps, &c. They also have machines especially adapted for turning out various articles from Brass, Steel and Iron Wire.

SCOVILL MFG. COMPANY, 423 Broome street, New York, who for some time have been manufacturing a large line of Aluminum Novelties, Art Goods, &c., have perfected a number of additions to the assortment, among which may be mentioned Hair Brushes, Soap Boxes, Framed Mirrors, Shaving Mugs and Brushes, Perfume Bottles and Atomizers, Salt and Pepper Boxes, Drinking Cups and Mugs, Lemonade Shakers and Soda Glass Holders, Hair Pins, as well as some new patterns of Cabinet Picture Frames.

MERRY & CLARK 535 West Fifteenth street, New York, issue a notice to the trade informing their patrons that they have secured the agency for the corrugated Conductors, Eave Trough, Gutters, Elbows, &c., made by Clark, Quien & Morse, Peoria, Ill., and that after March 1 they will carry a stock of from 50,000 to 100,000 feet of assorted sizes of galvanized iron corrugated round and square Conductor Pipe. They call attention to the fact that this corrugated Pipe is made from but one piece of metal, lock seamed and in 8-foot lengths.

BESIDES offering the Active Lawn Sprinkler, a description of which was given in our last issue, F. E. Kohler & Co., Canton, Ohio, are also agents for the Jewel Lawn Sprinkler, to which reference was made.

A. B. LAURENCE, New York manager of the Shultz Belting Company, St. Louis, Mo., will remove from 225 Pearl street to 113 Liberty street, this city, about May 1, where he will occupy the third floor, subletting such portion as he does not require.

THE PARTNERSHIP heretofore existing between F. H. Keller, A. W. Lieb and F. A. Shorkley, doing business as F. H. Keller & Co., Williamsport, Pa., has been dissolved, Mr. Shorkley retiring from the firm. All the claims owing to the partnership will be received by F. H. Keller and A. W. Lieb, who will continue the business under the style of F. H. Keller & Co.

UNDERHILL, CLINCH & Co., 94 Chambers street, New York, jobbers of Hardware, Farm Implements, &c., emphasize the fact that from a very large stock now stored on their premises, they are prepared to ship without delay hurry orders for seasonable goods, particularly Forks, Rakes, Hoes, Shovels, Spades, Scoops, &c., of the leading makes. At this time of the year farmers and others want their goods soon after they order, and they feel safely in a position to meet sudden demands promptly.

GEO. WEBB ALEXANDER, 401 Market street, San Francisco, will during 1894 represent the Pope Mfg. Company and the W. F. & John Barnes Company on the Pacific Coast. Mr. Alexander is the successor of the firm of Osborn & Alexander, having purchased Mr. Osborn's interest on October 16, 1893. Mr. Alexander will continue operating in Hardware, Mechanics' Tools and Workshop Machinery, making a specialty of the two latter branches and carrying a complete and diversified stock. Mr. Alexander has retained the old force of employees. Charles Watts, who for many years had exclusive charge of the Tool and Hardware department of the former firm, is continued in this capacity.

WAGNER MFG. COMPANY, Sidney, Ohio, to whose catalogue reference was made in our issue of last week, advise us that their nickel plated Hollow Ware is meeting with an increased demand. They also refer to the desirability of their Waffle Iron.

PEERLESS FREEZER COMPANY, Cincinnati, Ohio, advise us that this year they are making a 2-quart Peerless Freezer in addition to those mentioned in our issue of March 1, 1894. Their line of Freezers includes the Peerless, Giant and Zero, in sizes from 2-quart to 10-gallon.

CHICAGO RAZOR STROP COMPANY, Chicago, Ill., have established a New York headquarters at 64 William street, with R. A. Thompson as manager. This company make a full line of Swing and Box Strops. They are just introducing a new Swing Strop made of hog skin instead of webbing, which they refer to as costing but a trifle more, while more durable and better for the purpose.

The Bromwell Brush & Wire Goods Company.

THE BROMWELL BRUSH & WIRE GOODS COMPANY, Cincinnati, Ohio, issue for 1894 their seventy-fifth annual catalogue, containing 136 pages, with illustrations, list prices and descriptions of their goods. Referring to the length of time the concern have been in business the company remark that the business is still in the hands of the immediate descendants of its founder; and that so far as they know but three business houses in Cincinnati other than this company show such a record. It is stated that in 1819 Jacob Bromwell started the first Wire Goods business west of the Alleghanies. In succession came the names of William Bromwell, Bromwell & Melish, William Bromwell & Co., the Bromwell Mfg. Company, and in 1883 the present corporate name. The company have three large manufacturing plants employing nearly 1000 hands. The line of goods manufactured include Muzzles, Cages, Pot Cleaners, Potato Mashers, Poultry Coops, Gas Jet Protectors, Riddles, Traps, Railings, Settees, Guards, Sieves, Sifters, Strainers, Wire Sash Cord, Tea Pot Stands, Toasters, Flower Stands, Wire Garden Chairs, Wire, Wire Cloth, Wire Clothes Lines, Brushes, Corn Poppers, Brackets, Fenders, Egg Beaters, &c.

Price-Lists, Circulars, &c.

ACME BELL & DEVICE COMPANY, 11 Gold street, New York, and Lancaster, Pa.: Bells, &c. An illustrated price-list shows the Acme Door Bell, Challenge Door Bell, Hotel Call Bells, Family Call Bells, Bicycle Bells, Bicycle Locks, &c.

THE SANDWICH ENTERPRISE COMPANY, Sandwich, Ill.: Descriptive circular of an Aerating Pump. This Pump is so constructed that the valves can be reversed, when the Pump forces air downward instead of lifting water up. In this way cisterns are aerated much more rapidly and effectively than when pressure is not applied to the downward current of air. The valves are reversed by a small lever at the front side of the base. This Pump was exhibited in operation at the World's Fair, and many orders were there taken from persons who have since sent in testimonials of excellent results obtained.

THE CHICAGO HORSE SHOE COMPANY, 908 Ashland Block, Chicago: Catalogue of Horse and Mule Shoes, manufactured at the company's works in East Chicago. This is the first catalogue issued by this new company. It contains cuts of the different styles of Shoes the company are now putting on the market, together with tables showing the number of sizes made in each style, the weight of each Shoe and the average number in a keg. They make both Iron and Steel Shoes of extra light, light, medium and heavy weights, and with ordinary or long heels. The advantages of the location of these works are set forth in an introductory statement, and the conclusion of the catalogue is a presentation of 16 reasons for using the company's Shoes. The book is bound in a strong muslin cover to enable it to withstand rough usage.

CAVERHILL, LEARMONT & Co., Montreal: Price current of seasonable goods. The book is devoted to illustrations and descriptions of Screen Doors, Window Screens, Wire Cloth, Screen Door Hinges and Catches and Lawn Mowers. The goods shown are largely of American manufacture.

JOHN PRITZLAFF HARDWARE COMPANY, Milwaukee, Wis.: Spring and summer goods. Illustrations are shown of Lawn Mowers, Lawn Sprinklers, Window Screens, Spring Hinges, Barn Door Hangers, Oil Ranges, Lamp Stoves, Hammocks, Freezers, Water Coolers, Revolvers, Clippers, Milk Can Stock and Trimmings, Screen Wire, Wire Fencing, Post Hole Diggers, Washing Machines, Wringers, Refrigerators, farm and garden Tools, Shovels, Spades, Sheep Shears, Corn Planters, Road Scrapers, Wheelbarrows, &c.

THE GOODELL COMPANY, Antrim, N. H.: Cutlery. A large sized postal card, entitled "Traveling Salesman," calls attention to the desirability of the Cutlery manufactured by the company, and to a brick addition built to their factory in 1893, 100 feet long, 3½ stories high, which will be used in connection with their other works in the manufacture of Table Cutlery, Butchers' Knives, Carving Knives, Butchers' Steels, Shoe Knives, Kitchen Knives, &c.

THE ADAMS & WESTLAKE COMPANY, Chicago, Ill.: Brass Bedsteads. Catalogue No. 6. devoted to these goods, shows American Brass Bedsteads in a variety of patterns, over 50 pages being used for illustrations. The manufacturers state that in designing Bedsteads they have kept in view the requirements of the American market in material, construction, finish and design. Lines of these goods are made in solid

brass and spun brass. Attention is directed to their all brass Caster with supplementary wheel, designed to make the beds roll more easily.

DRAKE HARDWARE COMPANY, Burlington, Iowa: Spring price current. The catalogue of 37 pages contains illustrations and prices of Refrigerators, farm and garden Tools, Cradles, Scythes, Snaths, Grass Hooks, Pruning Shears, Hay Knives, Shovels, Spades, Post Hole Diggers, Pumps, Wheelbarrows, Farm Bells, Oilers, Clevises, Wire Stretchers, Haying Tools, Window and Door Screens, Spring Hinges, Clippers, Curry Combs, Freezers, &c.

E. J. HUSSEY & Co., 80 John street, New York: Bicycle Rolling Step Ladder and Blount Door Check. A circular being sent to the trade illustrates and describes these goods.

THE CAPITAL MACHINE TOOL COMPANY, Auburn, N. Y.: Electric Vises, Jack Screws, &c. The Vises are made with a continuous Screw, one-half of which is milled off, and a half nut allows it to slip over when not locked. The in and out motion is done by sliding instead of screwing, to avoid all wear on the Screw. After the Vise is pushed up to the work, one turn of the handle fastens it. The Jack Screws have heavy Steel Collars and Steel Screws.

McKINNON DASH & HARDWARE COMPANY, Buffalo, N. Y., and Columbus, Ohio: Dashes and Fenders. An 1894 catalogue of 40 pages illustrates Dash Feet, Dashes in various forms and patterns, Fenders, Curtain Roll Up Straps, Prop Block Washers, Rein Rails, &c. Near the front of the book lines of increasing length represent the proportion of growth in their business since opening their Buffalo factory in 1887. Illustrations of Leather Goods are printed to produce the effect of the finished article.

It Is Reported—

That Munnell & Young's Hardware store, at Canonsburg, Pa., was burglarized of several hundred dollars' worth of goods on the 1st inst.

That Horn Bros., Delavan, Minn., have sold their Hardware store to Shoen & Herring.

That Schockey & Co.'s Hardware business, at Abilene, Kan., will soon be removed to North Enid, O. T.

J. Walter Grimes has purchased the interest of C. L. Campbell in the Hardware firm of Campbell & Carlisle, Cambridge, Ohio. The new firm will be known as Carlisle & Grimes.

That H. Fiedler has opened a new Hardware store at Cuba City, Wis.

That Frank Broadhecker, Browns-town, Ind., opened his new Hardware and Stove store at that point on the 16th ult.

That C. W. Moffatt, Grand Gorge, N. Y., has sold his stock of Hardware and business to O. A. Maynard & Co.

That Edgar C. Trowbridge in the Hardware business at Waseca, Minn., has sold out.

That H. O. Monson & Co., Hardware merchants, Wheaton, Minn., have discontinued business.

That Millard Buxton has sold his interest in the Hardware store at Wingate, Ind., to Louis Benz.

That R. C. Walkup has disposed of his Hardware business at Mason City, Ill.

That William McCullough's Hardware store, Center Point, Ind., was burglarized on the 27th ult.

That W. S. Kaufman and D. N. Kaufman will soon open a Hardware store at Doon, Iowa.

That Baldwin Bros., Lincoln, Neb., have bought out the Hardware stock of Kelly & Co.

That burglars plundered the Hardware store of Thomas Parkinson, Muncie, Ind., on the 27th ult.

That Don Carlos, Hudson, Ohio, has bought out the I. N. Farrar stock of Tin and Hardware, and will soon again open the old store.

That the Hardware store of Coombs & Fulton, Burchard, Neb., was damaged by fire on February 21.

That Thomas Dodson has purchased his father's interest in the Hardware store at Canfield, Ohio, and will continue the business with an increased stock of goods.

That Schneider Bros. have opened a new Hardware store at Adams, Minn.

That John Wheeler's Hardware store, at Springville, N. Y., was destroyed by fire on the 28th ult.

That S. T. Howard has disposed of his Hardware store, at Le Roy, N. Y., to F. L. B. Taft.

That \$300 worth of goods were stolen from the Hardware store of Owen McCarthy, Denison, Tex., on February 20.

That Klove & Mosey, Leland, Ill., have erected a building in the rear of their Hardware store, which they will use for the storing of Farm Implements.

That George N. Baldwin, Leonidas, Mich., expects to discontinue the Hardware business about May 1.

That J. W. Brock has sold his half interest in the Hardware store at Canton, Ill., to his partner, James Ewan.

That Snead & Gillet have opened a new Hardware store, at Oak Grove, Mo.

That the Hardware firm of Coon & Ellingson, Edgerton, Wis., have been dissolved by mutual consent. Mr. Ellingson will continue the business.

That Charles Fink, August Geissler and T. K. Olson have bought out the Knatfold Hardware Company, Albert Lea, Minn., and have changed the name to the Albert Lea Hardware Company.

That the annual election of the Star Hardware Company, Toledo, Ohio, was held recently. The following officers were elected for the ensuing year: Frank Hillenkamp, president; G. J. Grossenbach, vice-president; George Schuck, secretary; and Robert Baur, treasurer. The board of directors is composed of the above officers and John A. Vonicht.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

White Lead.—The situation in the market for Dry White Lead remains practically as outlined in last week's report. Competition between corrodors is quite as keen, and prices have shown no sign of turning for the better, despite a further advance in quotations for crude material. It is an easy matter to buy good brands in round lots at $4\frac{1}{4}\phi$ @ $4\frac{1}{2}\phi$ for delivery during the next 60 days. No change has taken place in the market for Lead in Oil, prices being exactly the same as those that ruled a week ago, while outside

of a rather livelier jobbing trade business has not improved.

Red Lead.—Dealings have been commonplace in the extreme and the only sign of improvement was in the inquiry for small lots for prompt delivery. Hardly any interest has been shown in forward deliveries. Prices are still somewhat unsettled, but it does not appear that lower rates than were accepted last week have been taken in this quarter.

Litharge.—Large consumers have placed comparatively few orders and those were mostly for moderate quantities for delivery during the next six weeks. The majority claim to have enough stock to tide over their wants up to July 1 and are indifferent to orders of stock for later delivery. The common grades are quoted at $4\frac{1}{4}\phi$ @ $4\frac{3}{4}\phi$, as to size of lot, and the finer grades at the old list rates and discounts.

Orange Mineral.—There has been no improvement in the demand for either German or French brands, but importers offer somewhat reservedly and that fact serves to steady prices, or, at least, to prevent any serious decline. Domestic brands are unchanged in price and selling slowly.

Zincs.—New orders for American Oxide have been somewhat more numerous, but they were chiefly for moderate quantities and had no perceptible influence upon the market. Prices remain quite steady, however, since deliveries on old contracts proceed smoothly and make steady inroads upon manufacturers' stocks. Foreign stock, dry and in oil, is meeting with slightly better sale but the demand is readily met at old prices.

Colors.—No new feature has transpired in the market for any of the staple lines of Dry Colors. The business passing is moderate and at about former prices, but deliveries to grinders on old contracts have been larger. Oil Colors are selling better, but aside from this there is nothing new to say regarding the market. Business in various lines of ready-mixed Paints has also improved to some extent.

Oils and Turpentine.

Linseed Oil.—The market has softened a trifle. City crushers have maintained their prices, as have also Western crushers with whom they work in sympathy; but some of the independent Western firms have cut prices 1ϕ or 2ϕ , and still further concessions have been made in other quarters, particularly at second hands. Hence prices vary somewhat widely, or from 52ϕ for best city Raw down to 48ϕ for certain out of town brands that do not enjoy as high reputation. Business has been only fair, since large consumers have covered their wants for several months ahead.

Cotton Seed Oils.—A rather weak market has prevailed and about the only redeeming feature is that speculators have taken several lots at the low prices reached. On the spot there were sales from 28ϕ down to 27ϕ and at corresponding figures for other grades. The refined products have also suffered a decline, prime Summer Yellow going to 31ϕ , better quality to 35ϕ and Summer White to 36ϕ , on the spot.

Lard Oil.—The market has been very quiet, with prices nominally quoted at 65ϕ for prime winter. Holders were free in their offerings, but buyers responded only when actual wants compelled them to purchase. Some out of town prime Oil was sold at as low as 64ϕ . The off grades are held at 48ϕ @ 50ϕ for extra, 42ϕ for No. 1 and 38ϕ @ 40ϕ for No. 2, as to quantity.

Fish Oils.—No further business in crude Sperm was reported, and the price stands at $62\frac{1}{2}\phi$, indicating steady tone to the market. Crude Whale remains positively dull, and there has

been little doing in crude Menhaden. Cod is steady and unchanged.

Miscellaneous.—Prices for common Olive and for Cocoanut Oils are somewhat stiffer, owing to the fact that lots recently forced upon the market have been taken. As yet, however, no radical change in prices has taken place.

Spirits Turpentine.—The market has again remained very steady, with most business during the week at $31\frac{1}{2}\phi$ for regular and 32ϕ for machine barrels. Business has increased somewhat in volume, but the supply proved to be quite ample.

The Acme Door Bell.

Acme Bell & Device Company, 11 Gold street, New York, and Lancaster, Pa., are offering the door bell illustrations of which are herewith given. The button shown in Fig. 1 is so arranged that if it is pressed in, pulled out or turned in any direction the bell rings, all these movements being made by the same button. The frame above the

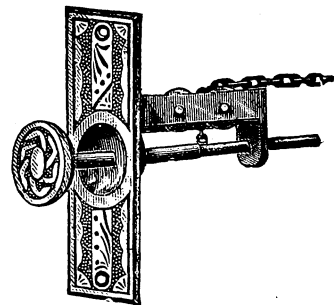


Fig. 1.—The Acme Door Bell Button.

button rod contains two pulleys, between which the chain leading to the bell runs. When the button is pushed or turned the chain works over the pulley nearest the bell; when the button is pulled the chain works over the pulley nearest the door jamb. The bell, Fig. 2, may be placed above or below the level of the button, in any part of

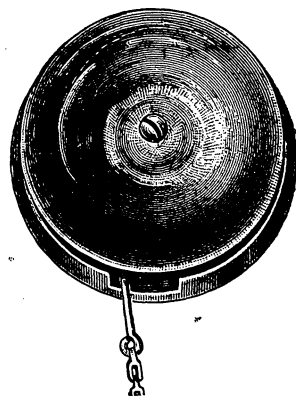
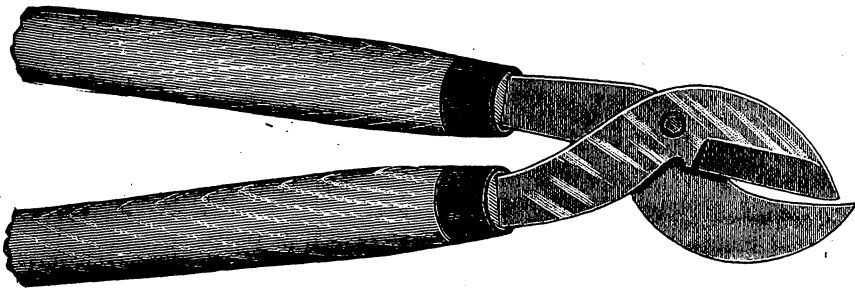


Fig. 2.—The Acme Door Bell Gong.

the house. The chain connecting the button with the bell passes under or over a pulley in a frame set in the door jamb inside the house. The bell striker is operated by clock work escapement and a flat coil spring. The bell gives an electric ring and requires no winding. The manufacturers claim the following advantages for the bell: That it is always ready for use; that it has a clear ring and sweet tone; there is nothing complicated about it; it is easily adjusted, and costs no more than the ordinary kind of bell. The button and plate is furnished in 14 different finishes.

Cronk's Wood Handle Pruning or Hedge Shear.

Cronk Hanger Company, Elmira, N. Y., are introducing a pruning or hedge shear, as here shown. The blades are



Cronk's Wood Handle Pruning or Hedge Shear.

of forged steel, with wooden handles. The shear is made with a shear cut, and is provided with a nipple and spring device to insure the absence of friction and the smooth working of the shears. The makers call attention to the leverage and to the ease with which the shears cut large limbs in pruning.

Colt's New Pocket Double Action Revolver.

The accompanying illustrations show a new double action 32-caliber central

drawing the cylinder latch to therear the cylinder swings to the left and downward out of its seat in the frame, as in Fig. 2. In this position all the chambers are presented for loading, while pressure against the end of the ejector rod under the barrel ejects all the

shells. After ejecting and loading the cylinder is returned to its seat in the frame, the cylinder latch automatically securing it in place. The point is made that by this construction all the facilities for loading and ejecting are obtained without sacrificing the feature of a solid frame, there being no hinge or joint in the frame between the barrel and stock; so constructed to avoid wearing, which might disturb the accuracy of the pistol. It is explained that the hammer may be cocked by the thumb or by the trigger, that after firing it rebounds and is positively locked in this

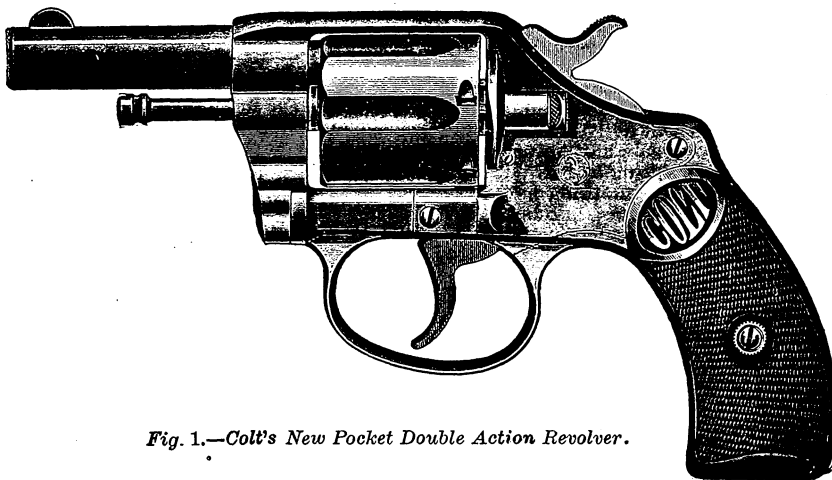


Fig. 1.—Colt's New Pocket Double Action Revolver.

fire pocket revolver, put on the market by Colt's Patent Fire Arms Mfg. Company, Hartford, Conn. The cylinder

safety position, so that it cannot strike the primer of a cartridge until it is again cocked. It is further explained

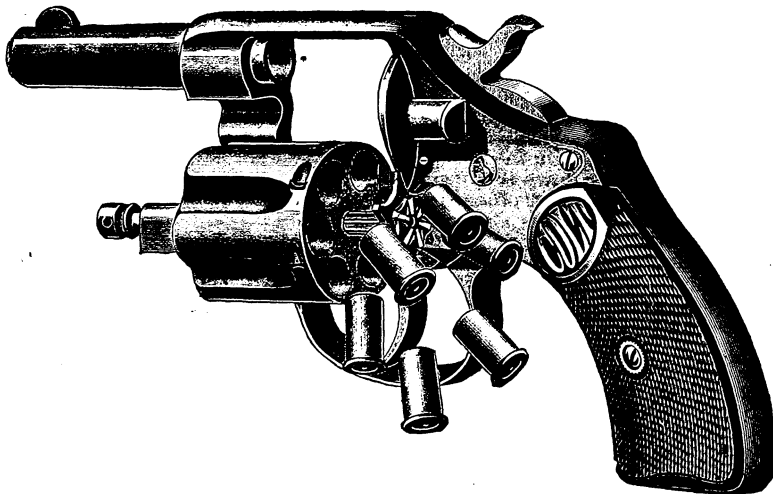


Fig. 2.—Colt's Revolver with Cylinder Swung Out.

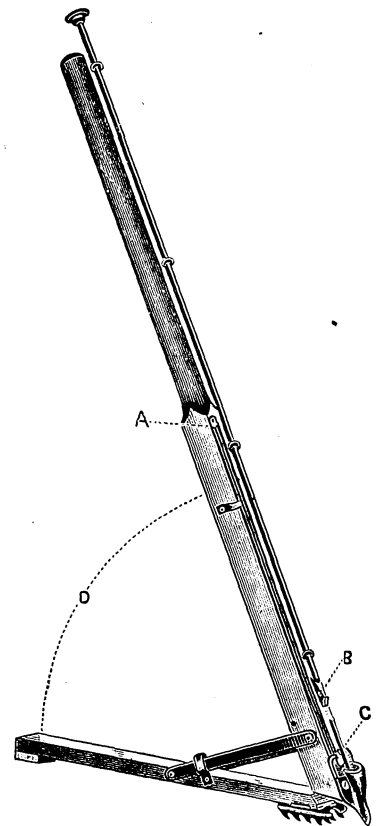
contains six chambers, mounted upon a crane, pivoted in the frame below the cylinder seat, and so arranged that upon

that the cylinder cannot be swung out of the frame unless the hammer is in its safety position, and that the act of

swinging the cylinder out of the frame automatically locks the trigger and the hammer in this position. This arrangement is to prevent premature discharges during manipulation and accidental discharges from blows, such as result from a fall, &c. It is stated that the falling of the hammer from any position cannot fire a shot unless the trigger is fully pulled back at the same time, as only then the hammer can fall beyond the safety position; also that the hand or pawl which rotates the cylinder has two working points to engage the cylinder ratchet, and by its construction the pawl also serves as cylinder bolt, preventing any further rotation after any one of the chambers in the cylinder coincides with the bore of the barrel. The cylinder latch prevents its backward rotation. The revolver is made with 2½, 3½ and 6 inch barrels, blue or nickel. The revolver shown measures 6½ inches and weighs 14 ounces.

The Belvidere Carpet Stretcher and Tacker.

The cut herewith shown represents a carpet stretcher and tacker being offered by McDivitt & Goddard, Belvidere, Ill. It consists of a wooden handle attached by pivoted braces at



The Belvidere Carpet Stretcher and Tacker.

the bottom to a wooden foot piece. At the front and on the under side of the foot piece is a metal claw with a series of teeth. A heavy rod with a head runs through screw eyes along the front of the handle and into a pointed cast socket at the lower end. The rack extending from A to the upper part of the socket is filled by the operator with tacks. The rack is of sheet metal, with the edges so folded as to leave a channel along its upper side, the heads of the tacks being beneath the folded edges, the bodies and points sticking

out. In operation the machine is held in the position shown in the cut, with the operator's foot on the foot piece as far forward as possible, so as to hold the claw firmly in the carpet, allowing the front edge of the claw to come within about $\frac{1}{4}$ inch of the edge of the carpet. Then by drawing the handle toward the operator the point of the socket is moved forward when the handle is pushed forward, thus drawing the foot piece and stretching the carpet. The operation is repeated until the carpet comes to the required position. By raising the rod above the point B the lower end of the rack is sprung over to the socket, allowing one tack to drop, point downward, and to be held by a spring in position to be drawn into the carpet by a blow from the lower end of the rod. The manufacturers claim that in using the machine the operator maintains an upright position, the person's weight on the carpet and stretcher assisting instead of retarding its working; that it obviates pulling, tugging, getting down on the knees or bending the back and that the machine is easy to operate, with nothing to get out of repair.

Perfection Hammock Rope Adjuster.

Covert's Saddlery Works, Farmer, N. Y., are offering a hammock rope adjuster, as shown in Fig. 1. It consists

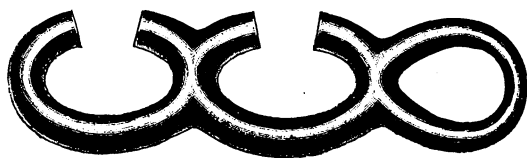


Fig. 1.—Perfection Hammock Rope Adjuster.

of links, two of which are open, through which the hammock rope is passed, as in Fig. 2. The manufacturers claim that the device is safe and



Fig. 2.—Perfection Hammock Rope.

quickly adjusted, and that the construction is so simple that a child can operate it as well as a grown person.

Relief Wringers.

The accompanying cuts represent two iron frame wringers offered by the

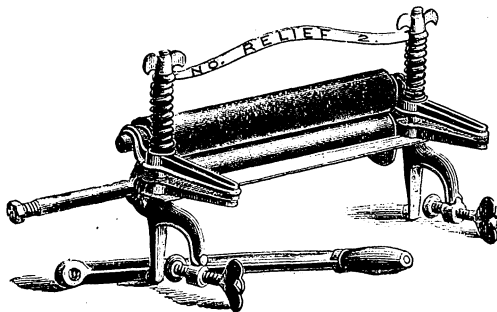


Fig. 1.—Relief Wringer.

American Wringer Company, 99 Chambers street, New York. The metal part of the wringer, Fig. 1, is all of wrought and malleable iron, galvanized, and the japanned springs are directly over the bearings. The upper

arms are each provided with a pin which fits into an opening in the lower arm, with a heavy rubber gasket between the arms at the pin ends to relieve the strain. The clamps are of the swing pattern, allowing adjustment to

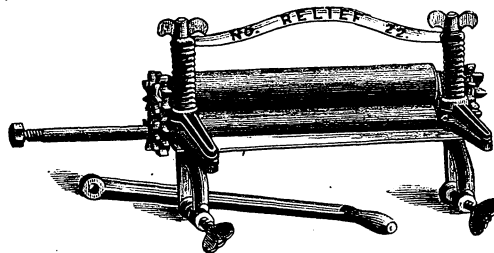


Fig. 2.—Relief Wringer with Cog Wheels.

round or straight surfaces. The wringer shown in Fig. 2 is of the same construction as the former, but in addition is provided with cog wheels. The manufacturers state that by the use of the thumb nuts and spiral springs the pressure can be adjusted quickly for either heavy or light work, preventing the rolls from being overstrained, and increasing the wear of the machine over that of the ordinary iron frame wringer.

The Ford Auger Bits.

The Ford Auger Bit Company, Holyoke, Mass., have enlarged their line of

Ford's bits, and have also modified their pattern in some particulars, which is referred to as improving their working qualities. The bits, an illustration

of which was given in *The Iron Age*, December 15, 1892, are now made in all the regular sizes in the following patterns: Auger, car, machine, car machine, ship auger and ship auger car bits; also ship augers. The manufacturers claim for these goods that they have a perfect clearance; that they will not clog, bind or twist off in any wood;

that they will draw themselves into any wood with the grain and bore a straight hole; that they will bore as easy in a deep hole as in a shallow one, and that they are especially adapted to fine work and deep boring.

Ægis Pocket Oilers.

Scovill Mfg. Company, Waterbury, Conn., New York, Boston and Chicago, are offering oilers as here shown in full sized cuts. They are made in two styles,



Fig. 1.—Ægis Pocket Oiler No. 5720.

shield, which screws on to the oiler, to prevent it leaking and soiling the pocket. The oilers are designed for

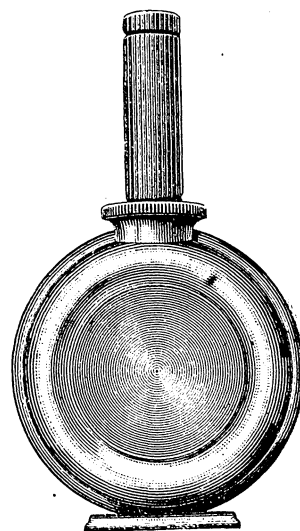


Fig. 2.—Ægis Pocket Oiler No. 568.

use in connection with bicycles, typewriters, sewing machines, carpet sweepers, lawn mowers, guns, pistols, door hinges, &c.

Method of Making New Process Twist Drills.

New Process Twist Drill Company, Taunton, Mass., are making twist drills by the process shown in the accompanying cuts. The company explain that in their process the drills are hot forged and not milled, and call atten-



Fig. 1.—Blank.

tion to the fact that by this process they submit the mild center which exists in all bar steel to the process of forging, thereby making the point and cutting lip of the drills especially tough and firm. Figs. 1, 2 and 3 show the process—first the blank, second the forged grooves, third the drill, after twisting. The manufacturers state that their drills larger than $\frac{3}{8}$ inch are all ground to exact size and are not turned in a lathe; and that sizes smaller than $\frac{3}{8}$ inch are milled, as the expense of forging would be too great to apply to these sizes. All sizes of drills are made from $\frac{1}{16}$ inch to 6 inches in

eter and $3\frac{1}{2}$ inches high, weighing 2 pounds. The cone is designed for placing in open fires to produce a perfect circulation of air through the coal and to insure combustion of the coal and all its gases. It is claimed that the device effects economy in coal; that it is a smoke and gas consumer; that a saving in fuel results from its use; that the radiant heat given out by the fire is

The Sanitary Garbage Pail.

The cuts here shown represent the sanitary garbage pail, offered by Sanitary Garbage Pail Company, 87-89 Shelby street, Detroit, Mich. The pail is made of galvanized iron, and is usually attached to an alley fence, or where

forces the matter to fall out. The point is made that this obviates the use and

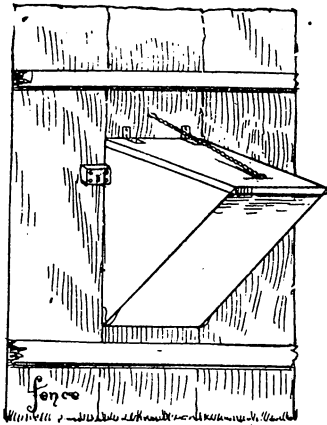


Fig. 2.—Pail Inside the Yard.

possible penetration of the receptacle by the insertion of a shovel or pick.

Heath's Ball Valve Pump.

The accompanying cut represents a bicycle pump, put on the market by S. F. Heath Cycle Company, Minneap-



Fig. 2.—Forged Grooves.

diameter, their product including nothing except twist drills, bit stock drills and sockets for taper shanks. The company have recently put on the market a new bit stock drill, of which all sizes larger than $\frac{3}{8}$ inch are solid; being hammered to size and not in-

it is easily accessible to the garbage collector. It requires a space of 12 x 24 inches, is filled from inside the premises and emptied from without. The pail can be removed from the fence for emptying into the collector's wagon, the collector being supplied with a

olis, Minn. The barrel is $1\frac{1}{2}$ x 12 inches in size, and the pump is capable, it is stated, of raising a pressure of 100 pounds to the square inch. Attention is directed to the universal coupling on the end of the hose, by means of which, it is explained, connection can be easily

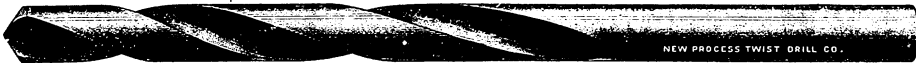
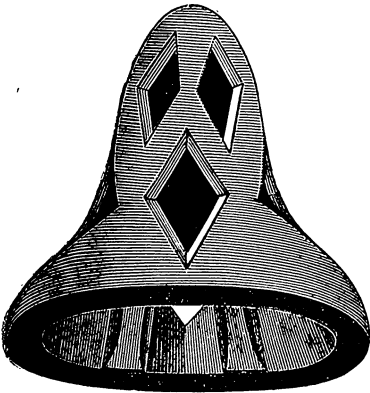


Fig. 3.—Finished Drill.

serted into a malleable iron shank. It is claimed that thus made the drills cannot slip or work loose in the shank, also that the hammering of the steel makes the drill much stronger than if milled from the bar.

Combustion Cone and Heat Radiator.

Silver & Co., 304-310 Hewes street, Brooklyn, and 20 Warren street, New



Combustion Cone and Heat Radiator.

York, are offering the combustion cone and heat radiator shown herewith. It is made of cast steel, $3\frac{1}{2}$ inches in diam-

master key to unlock the pail, which secures the exclusive use of the pail to the owner. When the pail is replaced in the trunnions and pushed back into

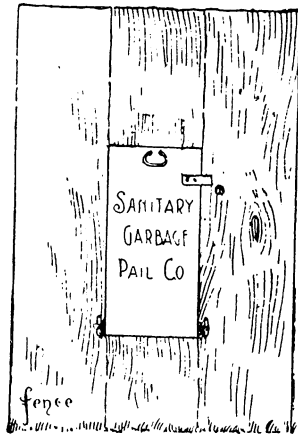
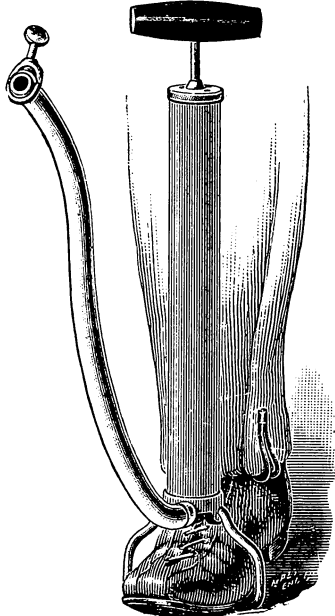


Fig. 1.—The Sanitary Garbage Pail.

position it is stated that it closes its cover and locks itself. It is remarked that it works perfectly in winter, it being 18 x 12 inches at the top with a 2-inch radius bottom, and when up-turned the weight of the contents

and quickly made with any valve. The stirrup in which the foot is placed is



Heath's Ball Valve Pump.

hinged to allow the barrel to oscillate with the motion of the hand, and may

be folded back against the barrel when carrying the pump. It is stated that the pump weighs about 2 pounds, and that it may be carried on a wheel if desired. The pump is nickel plated and guaranteed by the manufacturers not to break.

Crescent Blocks.

Walter Coleman & Sons, Edward J. F. Coleman, proprietor, Providence, R. I., are offering the Crescent brand of blocks, as herewith shown. The improved coal hoisting block, shown in Fig. 1, has a wrought iron strap inside the shell, connecting with the bearings, to give ample strength for heavy loads, and deoxidized Babbitt metal linings in the journals that stand, it is stated, the test of high speed and heavy loads without undue wear or heating. A large screw threaded cap is fitted to the outer end of each bearing, the cap containing a quantity of

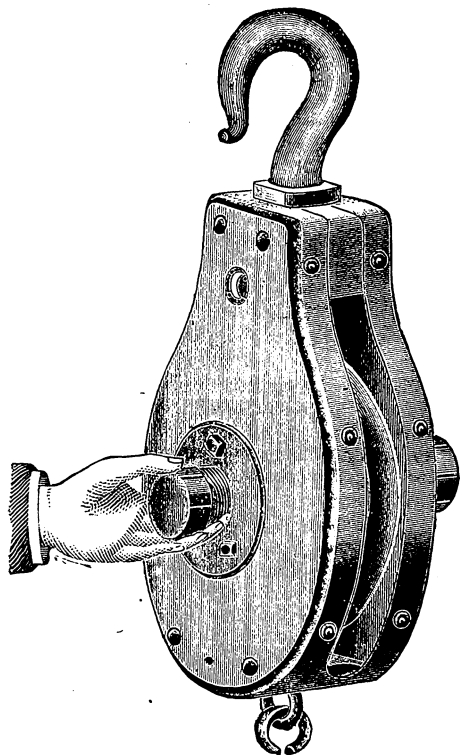


Fig. 1.—Improved Coal Hoisting Block.

graphite grease. It is explained that by giving the cap an occasional turn with the hand a fresh supply of the grease is forced through the entire length of the bearing, the grease thus covering the whole surface of the bearing regardless of the position in which the block hangs. This method obviates the necessity of taking down the blocks and of using a wrench or screw driver in refilling with grease. It is claimed that the sheave cannot wear the sides of the shell, as the bearings project through the shell against the hub of the sheave, giving the least possible side friction; that the double bearings prevent the sheave from tipping, the edges of the same from wearing thin, sharp and cutting the fall; that the blocks, with reasonable care, will last several years without repair to sheaves or bearings and that should they become worn, the blocks can be made as good as new by rebabbiting the journals. The blocks are made in two sizes, for manila or wire rope—20-inch block with $13\frac{1}{2} \times 2$ inch sheave and 24-inch block with $16 \times 2\frac{1}{2}$ inch sheave. The Crescent bridle block, Fig. 2, de-

signed for use on yachts, has attachments of anti-corrosive metal, which, it is stated, will neither rust nor corrode and will not stain the sails. The blocks are referred to as strong, simple, easily attached or detached and as not getting

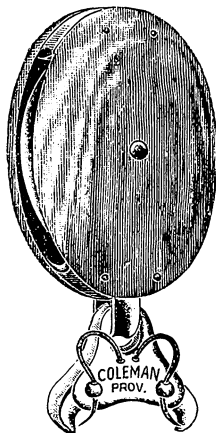
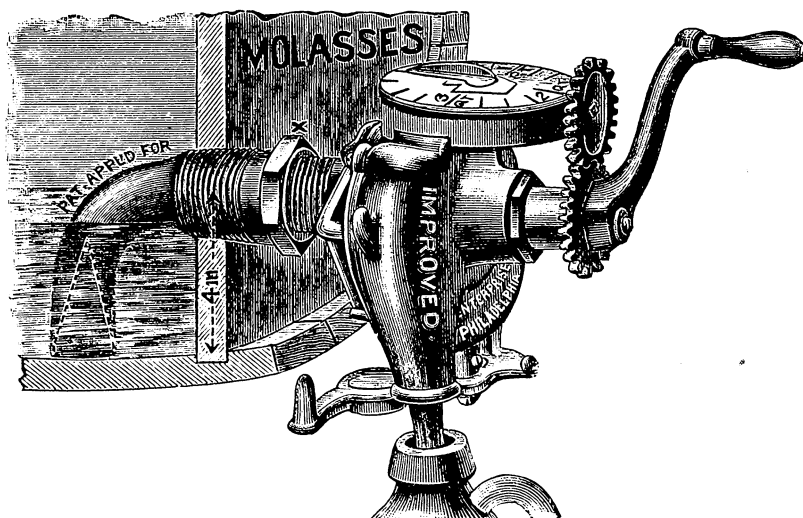


Fig. 2.—Crescent Bridle Block.

out of order, with no small parts to be lost overboard. The point is made that the shape of the block prevents a sharp turn to the wire rope bridle.

Draining Attachment for Measuring Faucet.

The Enterprise Mfg. Company of Pennsylvania, Philadelphia, are offering a draining attachment for their Enterprise self measuring faucet, as shown herewith. The device can be attached to all of their faucets now in use or on the market, and is screwed into a hole in the barrel head, the center of which is 4 inches from the inside edge of the bottom stave of the barrel. The attachment is thus designed to drain the barrel completely, avoiding waste. The point is made that the attachment fitting on the outside of the back of the faucet, it necessarily requires a larger hole in the barrel than the faucet; a firmer hold is consequently



Draining Attachment for Measuring Faucet.

taken and the whole arrangement is held more securely. There is an inverted strainer of conical shape in the lower end of the attachment tube, designed to thoroughly strain all the molasses, &c., thus preventing chips and other foreign substances from entering the faucet. It is explained that the

strainer being inside the tube practically takes up no room, and that there is no danger of losing it. The manufacturers recommend the attachment because of its economy, simplicity, durability and general utility.

Crown Self Basting Roaster and Baker.

The accompanying illustrations represent a self basting roaster and baker

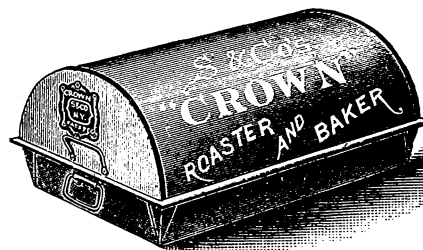


Fig. 1.—Crown Roaster and Baker.

put on the market by Silver & Co, 304-310 Hewes street, Brooklyn, and 20 Warren street, New York. It is made

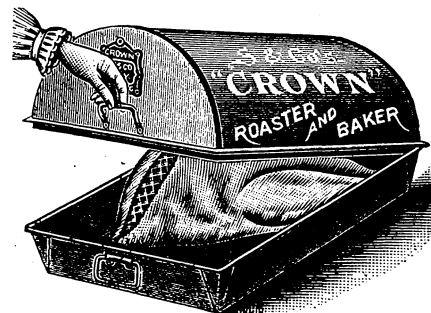


Fig. 2.—Manner of Raising Cover.

of American refined iron, with stationary handle on the cover and drop handle on the lower pan, and is accompanied with a sheet metal frame upon which meats are placed when roasting. It is claimed that the roaster and baker will

make tough meats and poultry tender; that it saves at least one-fourth the nutriment of the food, which is generally lost through steam and evaporation, and that everything baked or roasted in the pan will be more healthy and more digestible, as it will retain its sweetness, flavor and nourishment.

New Hammerless Gun.

Wilkes-Barre Gun Company, Wilkes-Barre, Pa., are introducing the new hammerless breech loading shot gun illustrated in the accompanying cuts. The general finish of the gun shown in Fig. 1 is referred to as handsome, and the material used as of the best. The guns are made with slot machine matted

triggers at each throw of the top lever, making it impossible to fire until the slide has been pushed forward and covers the word "Safe," which indicates that the gun is ready to be fired. If desired the safety slide may be locked by a small screw on the left of the top lever, so that the gun may be opened, loaded and fired without regard to the safety slide. The point is made that there is little cutting away of the stock,

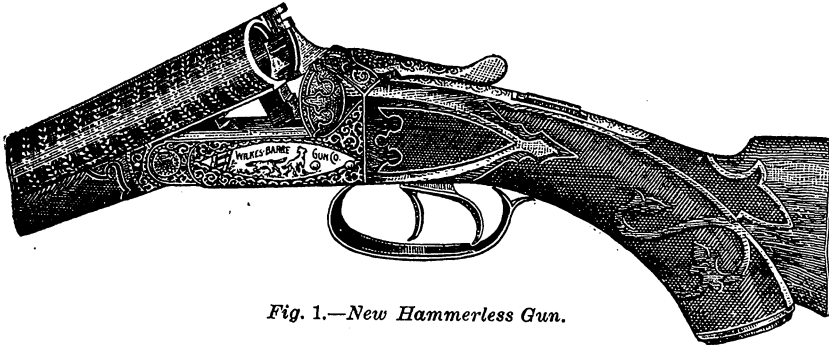


Fig. 1.—New Hammerless Gun.

rib, stocks of black walnut, oil finished or French polished, with high grade checkering. It is stated that the engraving is tasty, and on the higher priced guns elaborate. The guns are made in weight from 6 to 8 pounds, and the barrels used, it is remarked, are from the best English twist to the finest star Damascus. It is stated that the inside working parts, as shown in Fig. 2, are few and simple. The fastenings for the barrels are three in number, No 1 being a top fastening which is the extension of the top lever; Nos. 2 and 3 are under bolts which slide on the inside of the frame, locking the gun in the under lug in two places. Owing to the almost exclusive use of smokeless or nitro powders for trap and pigeon shooting, it is claimed that a special manner of boring has been adopted by the company that gives per-

fect results with nitro or black powders. An essential feature of the gun is the arrangement by which the barrels are prevented being taken off the frame or placed on again without the gun being cocked. The hammer, striking and firing pin being one solid piece, gives great force, it is remarked, to the blow, preventing misfire, or the firing pin catching or hanging in a broken primer, thus preventing the gun from opening easily after firing. The gun is so arranged that it is impossible to insert a shell without positively cocking the gun, and a safety slide is provided, which, it is stated, positively locks the

Burleigh's Bicycle Watch Carrier.

George K. Burleigh, Tilton, N. H., is introducing a bicycle watch carrier,

1½ ounces. A speed table accompanies each carrier, giving the number of strokes of pedals in 15 seconds for any speed from 6 minutes down to 2.30. The point is made that the inventor of the carrier is a watch maker, and has tested it over many miles of rough road.

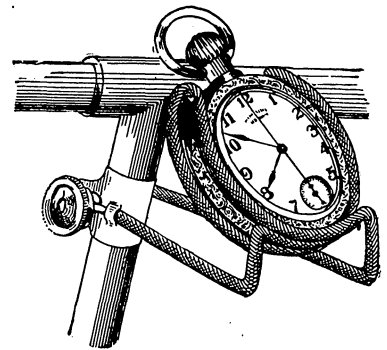


Fig. 1.—Burleigh's Bicycle Watch Carrier

The carrier is warranted by the manufacturer not to injure the most delicate watch.

A steel band fastener is made, to which the carrier is attached, for slipping over the dash board of a buggy or

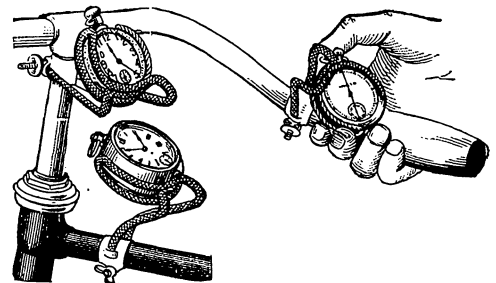


Fig. 2.—Carriers for Watch, Clock and Chronograph.

carriage, so arranged that it also serves as a rein holder. This is designed particularly for doctors, stage drivers and those whose business compels them to ride continuously.

Solid Steel Seamless Kettle.

The Cleveland Stamping & Tool Company, Cleveland, Ohio, are offering solid steel seamless kettles, as shown herewith. The kettles are referred to as being made seamless from cold rolled wrought steel. A feature of the kettle is the handle for tipping, when emptying its contents. A full line of these goods



Solid Steel Seamless Kettle.

are made of flat and round bottom deep kettles, maslin kettles and stew pots, which are furnished either polished inside, tinned or enameled.

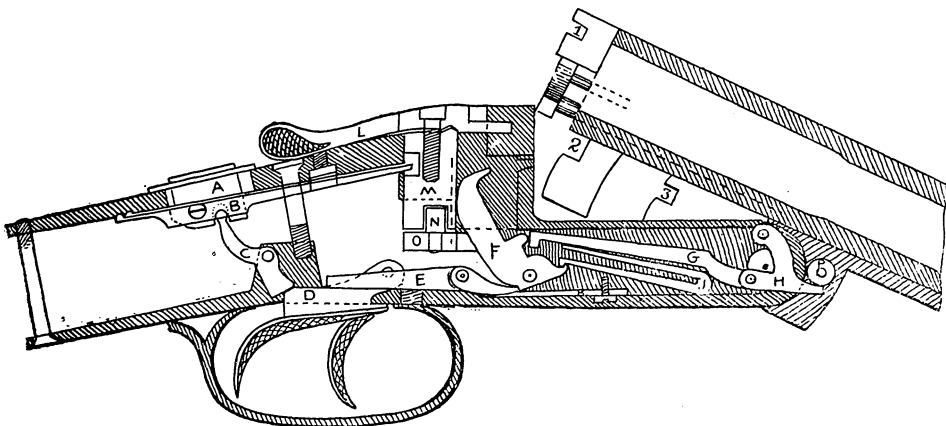


Fig. 2.—Working Parts of Hammerless Gun.

as shown in Fig. 1. The carrier is made of spring wire, covered with black woven linen thread, which, it is stated, fully protects the watch from any jar, and that the watch being held at an angle, cannot be injured in jewels or pinions. The carrier is attached to the machine by a nickel plated band, secured by a bolt and nickel plated thumb screw. In Fig. 2 the adaptability of the carrier for carrying a watch, small clock, and a chronograph or stop watch on the handle bar is shown. The carrier is designed to carry either a 16 or 18 sized watch, watch clock, or a 2-inch clock, and weighs, it is stated,

as shown in Fig. 1. The carrier is made of spring wire, covered with black woven linen thread, which, it is stated, fully protects the watch from any jar, and that the watch being held at an angle, cannot be injured in jewels or pinions. The carrier is attached to the machine by a nickel plated band, secured by a bolt and nickel plated thumb screw. In Fig. 2 the adaptability of the carrier for carrying a watch, small clock, and a chronograph or stop watch on the handle bar is shown. The carrier is designed to carry either a 16 or 18 sized watch, watch clock, or a 2-inch clock, and weighs, it is stated,

Current Hardware Prices.

MARCH 14, 1894.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic..... $\frac{1}{2}$ doz \$3.00, 83 $\frac{1}{2}$ @33 $\frac{1}{2}$ &10%
Excelsior..... $\frac{1}{2}$ doz \$10.00.....50&10&2%
North's..... $\frac{1}{2}$ doz net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—

American—
Eagle Anvil, $\frac{1}{2}$ doz.....15@15&5%
Horse shoe brand, Wrought.....11@11 $\frac{1}{2}$ %
Moore & Barnes Mfg. Co.....33 $\frac{1}{2}$ %
Imported—
Armstrong Mouse Hole.....10%@11%
S. & H., machine finished.....10%@11%
Trenton.....10%@11%
Wilkinson's.....10%@11%
Peter Wright's.....11@11 $\frac{1}{2}$ %

Anvil Vise and Drill—

Allen Anvil and Vise \$3.00.....40&10%
Cheney Anvil and Vise.....25%
Miller's Anvil Co., \$18.00.....20%
Star.....45&5%

Apple Parers—See Parers

Augers and Bits—

Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....60%
Common Augers and Bits.....70@70&10%
Cincinnati Bell Augers' Bits.....50&10%
Forstner Pat. Auger Bits.....15%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
O. E. Jennings & Co., No. 10, extension
lip.....40%
O. E. Jennings & Co., No. 30.....60%
O. E. Jennings & Co., Auger Bits, $\frac{1}{2}$ set
32 $\frac{1}{2}$ quarters, No. 5, \$5; No. 30, \$3.50.25%
Russell Jennings' Augers and Bits.25&10%
Lewis' Patent Single twist.....45%
L'Hommedieu Car Bits.....15&10%
Fugh's Black.....20%
Fugh's Jennings Pattern.....30%
Snell's Bits.....60&5%

Bit Stock Drills—

Cleveland.....50&10&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%
Morse Twist Drills.....50&10&5%
New Process Twist Drill Co.....50&10&5%
Standard.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%

Expansive Bits—

Clark's small, \$18; large, \$26.35@35&10%
Ives' No. 4, $\frac{1}{2}$ doz. \$80.....40%
Steer's, No. 1, \$26; No. 2, \$18.....35&40%
Stearns' No. 2, \$48.....20%
Swan's.....40%

Gimlet Bits—

Bee.....25@25&5%
Common..... $\frac{1}{2}$ gross \$2.75@3.25
Diamond..... $\frac{1}{2}$ doz \$1.25.....40&10%
Cl. Valley Mfg. Co.....30&10%
Hartwell's..... $\frac{1}{2}$ gro., \$10.00.....40&10%
Douglass'.....60@60&10%
Ives'.....60@60&10%
Shepardson's.....45&45&10%

Hollow Augers—

Bonney's Adjustable, $\frac{1}{2}$ doz \$48.....50%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%
Douglass'.....33 $\frac{1}{2}$ @33 $\frac{1}{2}$ &10%
French, Swift & Co. (Beecher).....33 $\frac{1}{2}$ @33 $\frac{1}{2}$ &10%
Ives'.....33 $\frac{1}{2}$ @33 $\frac{1}{2}$ &10%
Ives' Expansive, each \$4.50.....50&5%
Stearns'.....20&10%
Universal Expansive, each \$4.50.....20%
Wood's.....25@25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10&15&10&5%
Snell's.....25@25&10%
Snell's Ship Auger Pattern Car Bits.....15&10&15&10&5%
Watrous's.....25@25&10%

Awl Hafts—See Hafts, Awl.

Awls—

Brad, Handled..... $\frac{1}{2}$ gr. \$2.50@3.00
Brad, Shouldered..... $\frac{1}{2}$ gr. \$1.30@1.40
Peg, Flat..... $\frac{1}{2}$ gr. 35@38%
Peg, Shouldered..... $\frac{1}{2}$ gr. \$1.50@1.65
Scratch, Handled..... $\frac{1}{2}$ gr. \$4.00@4.50
Scratch, Socket..... $\frac{1}{2}$ doz. \$1.10@1.20

Awl and Tool Sets—See

Axes—

First quality, best brands.....\$7.00
First qual., other brands.....6.00
Second quality.....5.50

Axle Grease—See Grease,

Axles—

No. 1.....3 $\frac{1}{2}$ @4 $\frac{1}{2}$; 4 $\frac{1}{2}$ @5 $\frac{1}{2}$
Nos. 7 to 14.....70%
Nos. 15 to 23.....47%
Nos. 24 to 32.....70%
Concord Axles, loose collar.....3% cash
Concord Axles, solid collar.....4 $\frac{1}{2}$ @5 $\frac{1}{2}$
Concord Axles, solid collar.....5@5

Bag Holders—See Holders,

Balances—

Sash—
Pullman.....60%
Spring—
Spring Balances.....40%
No. 2000.....20
Chatillon, $\frac{1}{2}$ doz.....\$0.80 0.95 1.75 net
Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire—See Wire, Barb.

Bars—

Crow—
Cast Steel..... $\frac{1}{2}$ doz \$3 $\frac{1}{2}$ %
Iron, Steel Points..... $\frac{1}{2}$ doz \$3 $\frac{1}{2}$ %

Basins, Wash—

Standard Fiberglass, No. 1, 10 $\frac{1}{2}$ -in., \$1.80;
12-in., \$2.00; 18 $\frac{1}{2}$ -in., \$2.50; 15-in.,
\$3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82.....50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33 $\frac{1}{2}$ %

Beaters—

Egg—
Bryant's..... $\frac{1}{2}$ gross \$14.00
Double (H. & R. Mfg. Co.), $\frac{1}{2}$ gro., No. 0
\$12.00; No. 1, \$15.00; No. 2.....36.0%
Dover..... $\frac{1}{2}$ doz \$1.00@1.2%
Dover (Standard Co.)..... $\frac{1}{2}$ doz \$1.0%
Duplex (Standard Co.)..... $\frac{1}{2}$ doz \$1.00
Duplex Extra Heavy (Standard Co.)
 $\frac{1}{2}$ doz. \$3.50
Easy (H. & R. Mfg. Co.)..... $\frac{1}{2}$ gro \$12.00
Improved Acme (H. & R. Mfg. Co.)..... $\frac{1}{2}$ gro. \$9.00
Silver & Co..... $\frac{1}{2}$ doz \$5.50
Spral..... $\frac{1}{2}$ gro \$4.25 @ \$4.50
Triple (H. & R. Mfg. Co.)..... $\frac{1}{2}$ gro \$16.50

Culinary

Keystone, P. D. & Co., Each, No. 1, \$1;
No. 2, \$2.....20%

Bells—

Cow—
Common Wrought.....60&10%
Kentucky Durham.....70&10%
Kentucky, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Texas Star.....50&10@50&10&5%
Western, Sargent's list.....70&10%

Door—

Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Gong, Abbe's.....33 $\frac{1}{2}$ @34%
Gong, Barton's.....40&10&5%
Gong, Yankes.....45&10%
Lever, R. & E. Mfg. Co.'s.....50&10&2%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated.....net
Lever, Taylor's Bannan.....25&10%
Pull, Brooks'.....50&10&2%

Electric—

Bigelow & Dowse.....20%
Wollensak's.....20%

Hand—

Extra Heavy Brass.....70%
Light Brass.....70&10@70&10&5%
Silver Chime.....33 $\frac{1}{2}$ @34%
Witte, Yankes.....70%
Globe Cone's Patent.....25&10&5%

Miscellaneous—

Call.....45@50%
Farm Bells..... $\frac{1}{2}$ doz \$3.50
Steel Alloy Church and School Bells.....40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Hand Bellows.....40&10&50%
Molders'.....40&10&50%

Belting, Rubber—

Common Standard.....75@75&10%
Extra.....60&10&60&10&10%
Standard.....70&5@70&10%
N.Y.B. & P. Co., Carbon.....60@60&5%
N.Y.B. & P. Co., Diamond.....50&50&5%
N.Y.B. & P. Co., Para.....40@40&5%

Bench Stops—See Stops, Bench

Benders and Upsetters,

Tire—

Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upset-
ters.....20%
Stoddard's Lightning Tire Upsetters.....15%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.,
see Augers and Bits.

Blind Holders—See Holders.

Blind Adjusters—See Ad-

justers, Blind.

Blind Fasteners—See Fasten-

ers, Blind.

Blind Staples—See Staples,

Blind.

Blocks—

Cleveland Block Co., Mal. Iron, 5'@10'@60%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%
See also Machines, Hoisting.

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....80&10@80&10&5%
Genuine Eagle, Norway, list Oct. '84.....80&5@80&10%
Eagle, Norway, list Oct. '84.....80&10@80&10&15%
Phila. pattern, list Oct. 7, '84.....80%
P.B.W., old list.....70%
Bolt Ends, list Jan. 1, 1890.....80&10@80&20%
Machine, list Jan. 1, 1890.....80&10@80&20%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Chain (Sargent's list).....55&10%
Cast Iron Shutter Bolts.....70&10%
Ives' Patent Door Bolts.....60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wrt B. K. Flush, Common.....55&10%
Wrt Shutter, Brass Knob.....50@50&5%
Wrt Shutter, Sargent's list.....60&10%
Wrt Shutter, all Iron, Stanley's list.....50&10&5%
Wrought Square.....70&10@75%
Wrt Sunk Flush, Sargent's list.....60&10%
Wrt Sunk Flush, Stanley's list.....50&10&5%

Stove and Plow—

Plow.....60&10&5@60&10&10%
Stove.....60&10@60&10&10%
R. B. & W., Plow.....65%

Tire—

Common, list Feb. 28, '83.....65@65&10%
American Screw Company
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16, '84.....80%
Phila. list, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Phila., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
R. B. & W., Phila., list Oct. 16, '84.....80%

Borers, Tap—

Common and Ring.....20&10%
Clark's.....35@35%
Enterprise Mfg. Co.....33 $\frac{1}{2}$ @35%
Ives' Tap Borers.....33 $\frac{1}{2}$ @35%

Boring Machines—See Ma-

chines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon—

Per doz.....24%
Boxes, Miter.
Spiker's Excelsior, 3 in. \$7.50, 4 in
\$8.50, 5 in. \$13.00, 6 in. \$15.00.....20%

Braces—

American Bit Brace and Tool Co.
Nos. 10, 12, 20.....60&10%
Nos. 11, 14, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 38, 37.....70&10&5%
Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickel.....65&10@70%
Ratchet.....75&10@80%
Reps, Re and 30.....70&70&5%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., \$2.10; 10 in.....\$2.25
Buffalo Ball.....\$1.10@1.15
Barber's.....60&10%
Bartholomew's.....50&10@60&5%
Nos. 25, 27 and 30.....70&70&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....\$1.00@1.10
Davis Patent.....50&10%
Fray's Genuine Spoford's.....50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414
50&10%
Ives' New Haven Novelty.....70&70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spoford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....80%
Rose & Johnson.....50%
Sexton's.....50%
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickel.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickel.....40&10@50%
Buffalo Ball.....net, \$1.10@1.15

Brackets—

Shelf, fancy
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Shelf, plain
Regular list.....65@70%
Sargent's list.....60&10@70&10%
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See

Wire.

Broilers—

Hens' Self-Inch.....9 10 9x11
Basting, $\frac{1}{2}$ Per doz.....\$4.50 5.50 6.50
Morgan Odorless..... $\frac{1}{2}$ doz. \$12, 50%
New Haven.....50%
Queen City.....33 $\frac{1}{2}$ %
Wire Goods Co.....65&10%

Buckets, Well—

Galvanized—
Helwig's Flat Iron Band.....\$3.75
Helwig's Wirted Top..... $\frac{1}{2}$ doz \$4.00
Hill's..... $\frac{1}{2}$ doz 12 qt. \$4.25; 14 qt. \$5.25
Iron Clad..... $\frac{1}{2}$ doz. 14 qt. \$4.25@4.50

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See

Cleavers, Butchers.

Butts—

Brass—
Cast Brass, Fast.....33 $\frac{1}{2}$ @34%
Cast Brass, Loose Joint.....33 $\frac{1}{2}$ @34%
Cast Brass, Tiebout's.....50%
Wrought Brass.....80&80&10%

Cast Iron—

Fast Joint, Broad.....50&10&00%
Fast Joint, Narrow.....50&10&50%
Loose Joint, Japanned.....75&10%
Loose Joint, Jap. with Acorns.....75&10%
Loose Pin, Acorns.....75&10%
Loose Pin, Acorns, Japanned.....75&10%
Loose Pin, Acorns, Japanned,
Plated Tops.....75&10%
Mayer's Hinges
Parliament Butts.....50&50&10%

Wrought Steel—

Fast Joint, Broad.....50&50&10%
Fast Joint, Narrow.....50&50&10%
Fast Joint, Lt. Narrow.....50&50&10%
Inside Blind, Regular.....50&50&10%
Inside Blind, Regular.....50&50&10%
Loose Joint, Broad.....50&50&10%
Loose Pin.....50&50&10%
Table Butts, Back Flaps, &c.....50&50&10%
Bronzed Wrought Butts.....50&50&10%

Cages, Bird—

Hendryx, Brass.....10@50%
Hendryx, Enamelled.....40&10@50%

Calipers—See Compass.

Calks, Toe—

Burke's One Prong, Blunt.....4 $\frac{1}{2}$ @5 $\frac{1}{2}$
Burke's One Prong, Sharp.....5 $\frac{1}{2}$ @6 $\frac{1}{2}$
Burke's Two Prong, Blunt.....5 $\frac{1}{2}$ @6 $\frac{1}{2}$
Burke's Two Prong, Sharp.....5 $\frac{1}{2}$ @7 $\frac{1}{2}$
Gautier, One Prong, Blunt.....5 $\frac{1}{2}$ @6 $\frac{1}{2}$
Gautier, One Prong, Sharp.....5 $\frac{1}{2}$ @7 $\frac{1}{2}$

Can Openers—See Openers,

Can.

Cans, Milk—

S. & Co.: 5-gal., \$3.00; 8-gal., \$4.40;
10-gal., \$4.75 each.....40&10

Cans, Oil—

Galvanized Blue Band, 1 gal., $\frac{1}{2}$ doz. \$2.30
Galvanized Blue Band, 5 gal., Tip-Top,
 $\frac{1}{2}$ doz. \$12.00
Galvanized Blue Band, 5 gal., Faucet,
 $\frac{1}{2}$ doz. \$12.00
Glass Oil, Friend..... $\frac{1}{2}$ doz. \$3.75

Caps—

Percussion—
Hicks & Goldmark's and Union Metallic
Cartridge Co..... $\frac{1}{2}$ 1000
Eley's E. B.....66&58%
Eley's D Waterproof, Central Fire.....\$1.00
E. B. Grnd. Edge, Cent. Fire, 1-10's.....47%
E. B. Trimm'd Edge, 1-10's.....47%
F. L. Waterproof, 1-10's.....35@37%
G. D.....27@30%
Musket, Waterproof, 1-10's.....60&58%
S. B. Genuine Imported.....45%

Primers—

Berdan Primers.....25%
B. L. Caps (Sturtevant's Shells) \$1.00.....25%
All other Primers, \$1.20.....25%

Cards—

Watson's Cotton, Wool, Horse and
File, list January 28, 1891.....25%

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

B. B. Caps, Con. Ball, Swgd., \$1.85@1.90
B. B. Caps, Round Ball.....\$1.60@1.65
Blunt Cartridges, except 22 and 32 cal.,
additional 10% to above discounts.
Blank Cartridges, 22 cal., \$1.75.....2%
Blank Cartridges, 32 cal., \$3.50.....2%
Cent. Fire, Military and Sporting.....15&5&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Primed Shells and Bullets.....15&5&2%
Rim Fire Cartridges.....15&5&2%
Rim Fire Military.....15&5&2%

Carpet Sweepers—

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Chalk Lines—See Lines.		Wire Picture—		Drill Bits or Bit Stock		Fixtures Grindstone—	
Checks, Door—		Braided or Twisted.....		Drills—See Augers and Bits.		Moore's.....	
Unity.....		80¢50¢80¢15%		Drill Chucks—See Chucks.		P. S. & W. Co.....	
Chisels—		Corkscrews—See Screws, Cork.		Dripping Pans—		Reading Hardware Co.....	
Socket Framing and Firmer		See Knives, Corn.		See Pans, Dripping.		Sargent's Patent.....	
Ohio Tool Co.....		Crackers, Nut—		Drivers, Screw—		Fluting Machines—	
P. S. & W.....		Acme.		Allard's Spiral, new list.....		See Machines, Fluting.	
Witherby.....		Japanned, # gro., \$30.....		Brace Screw Drivers.....		Fluting Scissors—	
Buck Bros.....		Nickel Plated, # gro., \$30.....		Buck Bros.....		See Scissors, Fluting.	
Douglass.....		Blake's Pattern, # doz., \$2.00.....		Buck Bros' Screw Driver Bits.....		Fodder Squeezers—	
Merrill.....		Table (H. & B. Mfg. Co.).....		Clark's Pat.....		See Squeezers, Fodder.	
L. & J. White.....		Turner & Seymour Mfg. Co.....		Cincinnati.....		Forks—	
Tanged and Miscellaneous		Cradles—		Champion.....		Hay, Manure, &c. Asso. List, 70¢70¢55%	
Buck Bros.....		Grain.....		Clifton's.....		Hay, Manure, &c., Phila. List, 80¢80¢10%	
Charles Buck.....		50¢20¢50¢5¢2%		Douglass Mfg. Co.....		Plated, see Spoons.	
Butchers.....		Crayons—		Ellrich's Socket and Ratchet.....		Frames—	
Spear & Jacksons.....		White Crayons, # gross.....		Fray's Hol. H'dle Sets..... No. 3, \$12.00, 45%		Saw—	
Tanged Firmers.....		D. M. Steward Mfg. Co.:.....		Gay & Parsons.....		Red, Polished and Varnished.....	
Cold Chisels, fair quality, # 1.....		Metal Workers' # gross, \$2.50.....		Goodell's Automatic.....		White Vermont.....	
# 2.....		Railroad, # gross.....		Knapp & Cowie.....		# doz., \$1.50, 25%	
# 3.....		2.00.....		No. 1.....		Screen, Window and Door Frame.....	
# 4.....		2.00.....		No. 2.....		Bonanza Window Screens, 50¢50¢10%	
# 5.....		2.00.....		No. 3.....		Cortland.....	
# 6.....		2.00.....		Nos. 4 and 00, Acme and Ideal.....		Empire Fancy Screen Doors, # doz., \$12	
# 7.....		2.00.....		50¢100¢5%		Phillips' Window Screen Frames.....	
# 8.....		2.00.....		50¢100¢5%		50¢50¢5%	
# 9.....		2.00.....		Kob's Common Sense.....		Porter's Pat. Window and Door Frame.....	
# 10.....		2.00.....		# doz., \$5.00, 25%		33½¢10%	
# 11.....		2.00.....		Mayhew's Black Handle.....		Stearns Frames and Corners.....	
# 12.....		2.00.....		# doz., \$5.00, 25%		25¢25¢10%	
# 13.....		2.00.....		Mayhew's Monarch.....		Wabash Adjustable Window Screen.....	
# 14.....		2.00.....		# doz., \$5.00, 25%		40¢5%	
# 15.....		2.00.....		Sargent & Co.'s.....		Warner's Screen Corner Irons.....	
# 16.....		2.00.....		No. 1, Forged Blade.....		33½¢10%	
# 17.....		2.00.....		No. 20, 40 and 60.....		Freezers, Ice Cream—	
# 18.....		2.00.....		60¢100¢10%		American.....	
# 19.....		2.00.....		Screw Driver Bits, Parr's, # gross, \$6.25		Arctic.....	
# 20.....		2.00.....		# doz., 50¢75%		33½¢10%	
# 21.....		2.00.....		Stanley R. & L. Co.'s.....		Blizzard.....	
# 22.....		2.00.....		No. 64, Varnished Handles.....		60¢55¢5%	
# 23.....		2.00.....		No. 86.....		Buffalo Churn.....	
# 24.....		2.00.....		25¢100%		60¢85¢5%	
# 25.....		2.00.....		Syracuse Screw Driver Bits.....		Confectioners' Machine.....	
# 26.....		2.00.....		30¢30¢5%		50%	
# 27.....		2.00.....		C. T. Williamson Wire Novelty Co.....		Crown.....	
# 28.....		2.00.....		50%		Double Action Crown.....	
# 29.....		2.00.....		Egg Beaters—See Beaters, Egg		Gem.....	
# 30.....		2.00.....		Egg Poachers—		60%	
# 31.....		2.00.....		See Poachers, Egg.		60%	
# 32.....		2.00.....		Electric Bell Sets—		60%	
# 33.....		2.00.....		See Bells, Electric.		60%	
# 34.....		2.00.....		Emery—No. 4 to No. 54 to Flour, CF		60%	
# 35.....		2.00.....		48 gr.....		60%	
# 36.....		2.00.....		150 gr.....		60%	
# 37.....		2.00.....		F.F.F.		60%	
# 38.....		2.00.....		Kegs, # 1.....		60%	
# 39.....		2.00.....		4¢5¢		60%	
# 40.....		2.00.....		1/2 kegs, # 1.....		60%	
# 41.....		2.00.....		5¢6¢		60%	
# 42.....		2.00.....		1/4 kegs, # 1.....		60%	
# 43.....		2.00.....		5¢6¢		60%	
# 44.....		2.00.....		10 lb cans, 10.....		60%	
# 45.....		2.00.....		6¢6¢		60%	
# 46.....		2.00.....		10 lb cans, less		60%	
# 47.....		2.00.....		than 10.....		60%	
# 48.....		2.00.....		10¢10¢8¢		60%	
# 49.....		2.00.....		Enameled and Tinned		60%	
# 50.....		2.00.....		Ware—See Ware, Hollow		60%	
# 51.....		2.00.....		Escutcheon Pins—		60%	
# 52.....		2.00.....		See Pins, Escutcheon.		60%	
# 53.....		2.00.....		Escutcheons—		60%	
# 54.....		2.00.....		Brass Thread.....		60%	
# 55.....		2.00.....		60¢60¢10%		60%	
# 56.....		2.00.....		Door Lock.....		60%	
# 57.....		2.00.....		Same als. as Door Locks.....		60%	
# 58.....		2.00.....		25%		60%	
# 59.....		2.00.....		Wood.....		60%	
# 60.....		2.00.....		Expanded Metal—		60%	
# 61.....		2.00.....		List No. 5.		60%	
# 62.....		2.00.....		Door Mats, Galvanized.....		60%	
# 63.....		2.00.....		25%		60%	
# 64.....		2.00.....		Fencing, Painted Sheets.....		60%	
# 65.....		2.00.....		20%		60%	
# 66.....		2.00.....		Lathing.....		60%	
# 67.....		2.00.....		10%		60%	
# 68.....		2.00.....		Netting, Painted Sheets.....		60%	
# 69.....		2.00.....		20%		60%	
# 70.....		2.00.....		Tree Guards, Paneled.....		60%	
# 71.....		2.00.....		15%		60%	
# 72.....		2.00.....		Window Guards, Paneled.....		60%	
# 73.....		2.00.....		15%		60%	
# 74.....		2.00.....		Extractors, Lemon Juice—		60%	
# 75.....		2.00.....		See Squeezers, Lemon.		60%	
# 76.....		2.00.....		Fasteners, Blind—		60%	
# 77.....		2.00.....		Austin & Eddy No. 2008.....		60%	
# 78.....		2.00.....		# gr., \$9.00		60%	
# 79.....		2.00.....		Mackrell's, # doz., \$1.00.....		60%	
# 80.....		2.00.....		20¢20¢10%		60%	
# 81.....		2.00.....		Security Gravity.....		60%	
# 82.....		2.00.....		# gr., \$9.00		60%	
# 83.....		2.00.....		Van Sand's Old Pat., \$15 # gr.....		60%	
# 84.....		2.00.....		55¢10%		60%	
# 85.....		2.00.....		Yac Sand's Screw Pat., \$15 # gr.....		60%	
# 86.....		2.00.....		60¢10%		60%	
# 87.....		2.00.....		Zimmerman's.....		60%	
# 88.....		2.00.....		50¢10%		60%	
# 89.....		2.00.....		Faucets—		60%	
# 90.....		2.00.....		B. & B. Co.....		60%	
# 91.....		2.00.....		West's Lock, Open and Shut Key.....		60%	
# 92.....		2.00.....		50%		60%	
# 93.....		2.00.....		Burnside's Red Cedar.....		60%	
# 94.....		2.00.....		50%		60%	
# 95.....		2.00.....		Burnside's Red Cedar, bbl. lots.....		60%	
# 96.....		2.00.....		50¢10%		60%	
# 97.....		2.00.....		Cerk Lined.....		60%	
# 98.....		2.00.....		70¢70¢10%		60%	
# 99.....		2.00.....		Fenn's.....		60%	
# 100.....		2.00.....		40%		60%	
# 101.....		2.00.....		Fenn's Cork Stops.....		60%	
# 102.....		2.00.....		35%		60%	
# 103.....		2.00.....		Fray's Pat. Petroleum.....		60%	
# 104.....		2.00.....		60%		60%	
# 105.....		2.00.....		Metallie Key, Leather Lined.....		60%	
# 106.....		2.00.....		60¢10%		60%	
# 107.....		2.00.....		National Measuring, # doz., \$36.00 25¢10%		60%	
# 108.....		2.00.....		John Sommers.....		60%	
# 109.....		2.00.....		Peerless Best Block Tin Key.....		60%	
# 110.....		2.00.....		40%		60%	
# 111.....		2.00.....		IXI, 1st quality, Cork Lined.....		60%	
# 112.....		2.00.....		50%		60%	
# 113.....		2.00.....		Diamond Lock.....		60%	
# 114.....		2.00.....		Perfection, Fla. Red Cedar (in boxes).....		60%	
# 115.....		2.00.....		40%		60%	
# 116.....		2.00.....		Boss Metallie Key.....		60%	
# 117.....		2.00.....		50%		60%	
# 118.....		2.00.....		Reliable Cork Lined.....		60%	
# 119.....		2.00.....		O. K. Western Pattern Cork Lined.....		60%	
# 120.....		2.00.....		50%		60%	
# 121.....		2.00.....		No Brand, Red Cedar (in bbls.).....		60%	
# 122.....		2.00.....		60¢10%		60%	
# 123.....		2.00.....		Western Pattern Metallie Key.....		60%	
# 124.....		2.00.....		40%		60%	
# 125.....		2.00.....		No Brand Metallie Key.....		60%	
# 126.....		2.00.....		60%		60%	
# 127.....		2.00.....		Self Measuring.....		60%	
# 128.....		2.00.....		Enterprise, # doz., \$36.00.....		60%	
# 129.....		2.00.....		25%		60%	
# 130.....		2.00.....		Lane's # doz., \$36.00.....		60%	
# 131.....		2.00.....		25¢10%		60%	
# 132.....		2.00.....		Star.....		60%	
# 133.....		2.00.....		60%		60%	
# 134.....		2.00.....		Star, Metallie Plug, new list.....		60%	
# 135.....		2.00.....		40%		60%	
# 136.....		2.00.....		Lockport, Metallie Plug, reduced list.....		60%	
# 137.....		2.00.....		60%		60%	
# 138.....		2.00.....		Felloe Plates—		60%	
# 139.....		2.00.....		See Plates, Felloe.		60%	
# 140.....		2.00.....		Fibre Ware—See Ware, Fibre.		60%	
# 141.....		2.00.....		Fifth Wheels—		60%	
# 142.....		2.00.....		Brewster.....		60%	
# 143.....		2.00.....		50¢55%		60%	
# 144.....		2.00.....		Derby and Cincinnati.....		60%	
# 145.....		2.00.....		45¢55%		60%	
# 146.....		2.00.....		Files—		60%	
# 147.....		2.00.....		Domestic—		60%	
# 148.....		2.00.....		American.....		60%	
# 149.....		2.00.....		60¢100¢100%		60%	
# 150.....		2.00.....		Arcade.....		60%	
# 151.....		2.00.....		80¢100¢100%		60%	
# 152.....		2.00.....		G. & H. Barnett (Black Diamond).....		60%	
# 153.....		2.00.....		60¢100¢100%		60%	
# 154.....		2.00.....		Eagle.....		60%	
# 155.....		2.00.....		60¢100¢100%		60%	
# 156.....		2.00.....		Nicholson Files, Rasps, &c. 60¢100¢100%		60%	
# 157.....		2.00.....		60¢100%		60%	
# 158.....		2.00.....		Nicholson (X.F.) Files.....		60%	
# 159.....		2.00.....		25%		60%	
# 160.....		2.00.....		Nicholson's Royal Files (Seconds).....		60%	
# 161.....		2.00.....		75%		60%	
# 162.....		2.00.....		(extra prices on certain sizes).....		60%	
# 163.....		2.00.....		Other makers, best brands.....		60%	
# 164.....		2.00.....		60¢100¢100%		60%	
# 165.....		2.00.....		Fair brands.....		60%	
# 166.....		2.00.....		70¢100¢100%		60%	
# 167.....		2.00.....		Second quality.....		60%	
# 168.....		2.00.....		80¢80¢5%		60%	
# 169.....		2.00.....		Arcade Horse Rasps.....		60%	
# 170.....		2.00.....		50¢100¢100%		60%	
# 171.....		2.00.....		Chelsea Horse Rasps, Hand Cut.....		60%	
# 172.....		2.00.....		50¢100%		60%	
# 173.....		2.00.....		Hellier's Horse Rasps.....		60%	
# 174.....		2.00.....		50¢100%		60%	
# 175.....		2.00.....		McGaffrey			

Halters—
 Cover's Adj. Rope Halters.....40¢2½
 Cover's Adj. Web Halters.....35¢5½2½
 Cover's Hemp Horse and Cattle Tie.....50¢10½2½
 Cover's Jute Cattle Ties.....70¢10½2½
 Cover's Jute Horse Ties.....70¢2½
 Cover's Rope, 7-16 in., Jute.....70¢2½
 Cover's Rope, 1/4 in., Hemp.....50¢2½
 Cover's Rope, Jute.....80¢10½10½2½
 Cover's Saddlery Works Halters.....35¢4½
 Cover's Saddlery Works Handy Web Halters.....35¢4½
 Cover's Saddlery Works Horse and Cattle Ties.....35¢4½

Hammers—
Handled Hammers—
 Athol Tool Co.....50¢10½
 Buffalo Hammer Co.....50¢10½
 Humason & Beckley.....50¢10½
 Verree.....40¢10½
 Cheney's Claw.....40¢10½
 Cheney's Machinist's & Riveting.....50¢8½
 C. Hammond & Son.....40¢10½
 Magnetic Tack, Nos. 1, 2, 3, 1, 25, 1, 50, 1, 75, 1, 100.....30¢10½
 Maydole's, list Dec. 1, '85.....25¢10½35¢
 Nelson Tool Works.....40¢10½
 Peck, Stow & Wilcox.....35¢4½
 Fayette R. Plumb.....40¢10½
 Artisan's Choice, A. E. Nall.....40¢10½
 Horseshoe Turning Hammers.....50¢
 Regular Y. & P. A. E. Nall.....50¢
 Other Hammers.....50¢10½
 Sargent's.....40¢40¢10½
 Warner & Nobles, new list.....25¢10½

Heavy Hammers and Sledges—
 3 lb and under.....\$4.00
 3 to 5 lb.....75¢15¢80¢
 Over 5 lb.....\$8.00
 Wilkinson's Smiths.....10¢11¢12¢

Handcuffs and Leg Irons—
 See Police Goods.

Handles—
Cross-Cut Saw Handles—
 Atkins, new list.....40¢
 Champion.....15¢
 Ely's Perfection.....\$3.00
 Sensible.....\$3.00

Iron, Wrought or Cast—
 Barn Door, \$ doz \$1.40.....10¢10½
 Bronze Iron Drop Latches, \$ doz 70¢ net
 Chest and Lifting.....70¢70¢10½
 Door or Thumb.....0 1 2 3 4
 Per doz.....\$0.90 1.00 1.08 1.35 1.50
 60¢10¢10½
 Jap'd Store Door Handles—Nuts, \$1.62
 Plate, \$1.10; no plate, \$0.88.....net
 Roggin's Latches.....\$ doz 30¢35¢

Wood—
 Auger, assorted.....\$ gr 5.00
 Auger, large.....\$ gr 7.00
 Auger, small.....\$ gr 2.75
 Brad A.W.I.....\$ gr 2.00
 Apple Firmer Chisel, ass'd.....\$ gr 5.00
 Apple Firmer Chisel, large.....\$ gr 6.00
 Hickory Firmer Chisel, ass'd.....\$ gr 4.50
 Hickory Firmer Chisel, large.....\$ gr 5.00
 Socket Firmer Chisel, ass'd.....\$ gr 5.00
 Socket Framing Chisel, ass'd.....\$ gr 5.00
 Chisel, Fibre Head.....33¢4½
 Hammer, Hatchet, Axe, &c.....40¢40¢5½
 Hoe, Rake, Shovel, &c.....\$ set \$1.25
 Pat. Auger, Ives.....\$ set \$1.00
 Pat. Auger, Swan, ass'd.....\$ set \$1.00
 Saw and Plane.....40¢10¢50¢
 J. B. Smith & Co's Pat. File.....50¢

Hangers—
 Barn Door, New England.....70¢70¢8½
 Barn Door, old patterns.....70¢70¢8½
 Barry.....50¢
 Best Anti-Friction.....60¢10¢60¢10½5½
 Boss.....60¢10¢60¢10½5½
 Carrier Steel Anti-Friction.....60¢10½
 Champion.....60¢10½
 Chicago Anti-Friction.....80¢10½
 Climax Anti-Friction.....55¢
 Cincinnati Nos. 1, \$2.25; 3, \$2.50; 4, \$2.50.....60¢80¢10½
 Cronk's (Wood Track).....60¢10½5½
 Duplex (Wood Track).....60¢10½5½
 Economy, \$6.00.....60¢10½
 Hamilton Wrought Steel Track.....55¢
 Interstate.....60¢10¢80¢
 Kidd's.....60¢60¢10½
 Lane's New Standard.....60¢50¢8½
 Lane's Parlor.....60¢50¢10½
 Lane's Standard.....60¢50¢10½
 Lundy, Steel Parlor.....40¢
 Magic.....45¢10½
 Matchless.....50¢10½
 Moody.....45¢
 Moore's Baggage Car Door.....33¢4½
 Moore's Elevator.....33¢4½
 Moore's Railroad.....55¢
 Nickel, Steel, Nos. 0, \$2.5; 1, \$2.0; 2, \$1.5.....40¢10¢50¢
 Orleans Steel.....55¢
 Paragon Nos. 5, 5½, 7 and 8.....20¢10½
 Pendulum, Payson's.....40¢40¢10½
 Perfection.....50¢10¢10½5½
 Richards.....30¢80¢10½
 Samson Steel Anti-Friction.....55¢
 Star.....40¢10¢40¢10½5½
 Stearns' Anti-Friction.....20¢10½10½
 Stearns' Challenge.....25¢10½10½
 Sterling.....60¢10¢80¢
 Terry's Ideal.....60¢10¢60¢10½5½
 Terry's Motor.....60¢10¢60¢10½5½
 Terry's Shield.....50¢10¢60¢
 Terry's Solid.....50¢10¢60¢
 Terry's Wrought Single Strap.....50¢10½
 Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....50¢82¢
 Warner's Pat.....20¢10½10½
 Wild West.....45¢10½
 Zenith for Wood Track.....55¢

Harness Snaps—See Snaps.

Hatchets—
 American Axe and Tool Co.....40¢10
 Blood's.....40¢10
 Hunt's.....40¢10
 Mann's.....40¢10
 Underhill's.....40¢10
 O. Hammond & Son.....10¢
 Fayette R. Plumb.....10¢
 Collins.....10¢
 Buffalo Hammer Co.....10¢
 Kelly's.....50¢50
 P. S. & W. Co.....10¢
 Sargent's & Co.....10¢
 Schulte, Lohoff & Co.....10¢
 Ten Eyck Edge Tool Co.....10¢

Hay and Straw Knives
 See Knives.

Hinges—

Blind Hinges—
 Clark's
 Nos. 1, 3, 5, 1868, Old Pattern.....75¢10½5½
 Nos. 1 and 3, Tip Pattern.....75¢10½5½
 No. 50, Buffalo Noiseless, 40, 60, and 65.....75¢
 Buffalo Reversible, Nos. 8, 2, 1½, 1 and 0.....70¢5½
 No. 1, Cottage, for wood only.....80¢10½
 No. 1, Diamond, for wood only.....80¢5½
 Dixie L. & P., Nos. 3, 2½, 2, 1½, 1, 0, 00, 4 and 5.....75¢5½
 No. 25, Empire Reversible.....75¢10½
 Lull & Porter, Nos. 3, 2½, 2, 1½, 1, 0, 00, 4 and 5.....75¢10½2½
 Mortise Gravity, Nos. 2, 4, 4½, 6, 8, 9, and 10.....50¢
 Huffer.....50¢50¢10½
 Parker.....75¢10½
 North's Automatic Blind Pictures, No. 1 for Wood, \$9.00; No. 3, for Brick, \$11.50.....75¢10½75¢10½5½
 Reading's Gravity.....75¢10½75¢10½5½
 Sargent's Nos. 1, 3, 5, 11, 12, 13.....75¢10½75¢10½5½

Gate Hinges—
 Automatic.....\$ doz \$12.50, 50¢
 Clark's, Nos. 1, 2, 3.....60¢10½60¢10½5½
 N. E.....\$ doz \$7.80, 60¢60¢10½
 N. E. Reversible.....\$ doz \$5.60, 60¢60¢10½
 N. Y. State.....\$ doz \$4.90, 60¢60¢10½
 Western.....\$ doz \$4.20, 60¢60¢10½

Spring Hinges—

Acme.....30¢
 American, Gem and Star.....20¢
 Bardsley's Patent Checking.....15¢
 Barker's Double Acting.....25¢
 Bommer's Japanned.....35¢
 Bommer's All other Kinds.....30¢
 Buckman's.....15¢20¢
 Champion.....30¢
 Chicago.....30¢
 Devore, No. 1.....\$ gro. \$13.00
 Empire and Crown.....20¢
 Freepoint.....\$ gro. \$12.00
 Geer's Spring and Blank Butts.....40¢
 Hero and Monarch.....40¢
 Ideal No. 3.....\$ gross \$10.00
 J. G. C. Covered.....\$ gro. \$30.00, 50¢5½
 New Idea No.1 and 10.....\$ gross \$13.00
 New Idea Dbl. Acting.....45¢
 No. 10 Matchless.....60¢
 No. 25 Unbreakable.....60¢
 Oxford.....20¢
 Reliable.....20¢
 Rex.....\$ gro. \$13.00
 Royal.....60¢60¢7½
 Samson.....60¢60¢7½
 Stearns' Noiseless Floor Hinge.....\$ set, \$5.00, 20¢10¢30¢
 Union Hinge Co., list.....55¢
 Union Spring Hinge Co., list.....20¢
 March, 1888.....25¢10½
 U. S.....25¢10½
 Wiles, No. 1, \$ gro. \$10; No. 2.....\$13

Wrought Iron Hinges—

List February 14, 1891.
 Corrugated Strap and T.....60¢60¢10½
 Steel and T.....60¢60¢10½
 Plate Hinges, 8, 10 and 12 in., \$ doz.....55¢
 "Providence" over 12 in. \$ doz.....44¢
 Rolled Blind Hinges, Nos. 32 and 34.....50¢10½
 Rolled Blind Hinges, Nos. 232 and 234.....50¢10½
 Rolled Plate.....70¢10½
 Rolled Raised.....70¢10½
 Screw Hook and Eye.....\$ in. \$ doz 75¢
 \$ 1 in. \$ doz 84¢
 \$ 1½ in. \$ doz 94¢
 \$ 2 in. \$ doz 104¢
 \$ 2½ in. \$ doz 114¢
 \$ 3 in. \$ doz 124¢
 \$ 3½ in. \$ doz 134¢
 \$ 4 in. \$ doz 144¢
 \$ 4½ in. \$ doz 154¢
 \$ 5 in. \$ doz 164¢
 \$ 5½ in. \$ doz 174¢
 \$ 6 in. \$ doz 184¢
 \$ 6½ in. \$ doz 194¢
 \$ 7 in. \$ doz 204¢
 \$ 7½ in. \$ doz 214¢
 \$ 8 in. \$ doz 224¢
 \$ 8½ in. \$ doz 234¢
 \$ 9 in. \$ doz 244¢
 \$ 9½ in. \$ doz 254¢
 \$ 10 in. \$ doz 264¢
 \$ 10½ in. \$ doz 274¢
 \$ 11 in. \$ doz 284¢
 \$ 11½ in. \$ doz 294¢
 \$ 12 in. \$ doz 304¢
 \$ 12½ in. \$ doz 314¢
 \$ 13 in. \$ doz 324¢
 \$ 13½ in. \$ doz 334¢
 \$ 14 in. \$ doz 344¢
 \$ 14½ in. \$ doz 354¢
 \$ 15 in. \$ doz 364¢
 \$ 15½ in. \$ doz 374¢
 \$ 16 in. \$ doz 384¢
 \$ 16½ in. \$ doz 394¢
 \$ 17 in. \$ doz 404¢
 \$ 17½ in. \$ doz 414¢
 \$ 18 in. \$ doz 424¢
 \$ 18½ in. \$ doz 434¢
 \$ 19 in. \$ doz 444¢
 \$ 19½ in. \$ doz 454¢
 \$ 20 in. \$ doz 464¢
 \$ 20½ in. \$ doz 474¢
 \$ 21 in. \$ doz 484¢
 \$ 21½ in. \$ doz 494¢
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 \$ 28 in. \$ doz 624¢
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Plate.....38½¢
 Romer's Night Latches.....15¢
 R. & E. Mfg. Co., list Mar. 20, 1893.....60¢
 Sargent & Co., Lds. Atg. 1.1¢.....50¢
 Warner's Burglar Proof.....50¢
 Yale.....net prices

Elevator—

Moore's.....38½¢

Padlocks—

Wrought Iron Padlocks—
 Brittan, Graham & Mathes, list Jan. 1, 1894.....75¢
 Mallory, Wheeler Co., list January 1, 1894.....75¢
 Norwich Lock Mfg. Co., list June 10, 1891.....50¢
 Russell & Erwin Mfg. Co., list June 10, 1891.....50¢
 Sargent & Co., list January 1, 1894.....75¢
 William Wilcox Mfg. Co., list January 1, 1894.....75¢
 Ames Sword Co. up to No. 150.....40¢
 Ames Sword Co. above No. 150.....50¢
 Barnes Mfg. Co.....40¢
 Barnes Padlocks.....40¢
 A. E. Deltz.....40¢
 Eagle.....40¢
 Eureka, Eagle Lock Co.....40¢
 B. T. Fraim's Keystone Scandinavian.....50¢
 1010 line.....50¢
 120 line.....50¢
 109 line.....50¢
 510 line.....50¢
 225, 610 and 209 lines.....50¢
 All other numbers.....50¢
 Horseshoe.....50¢
 Hotchkiss.....50¢
 Nock's.....50¢
 Romer's Nos. 0 to 91.....50¢
 Romer's Scandinavian, &c., Nos. 100 to 505.....50¢
 Scandinavian.....50¢
 Slaymaker, Barry & Co.....50¢
 No. 1010 line.....50¢
 No. 41 line.....50¢
 No. 61 line.....50¢
 No. 21 line.....50¢
 Star.....50¢
 Yale Lock Mfg. Co.'s.....net prices

Sash, &c.—

Attwell Mfg. Co.....25¢
 Champion Safety list January 1893.....70¢
 Clark's No. 1, 110; No. 2, 33 * gr.....35¢
 Common Sense, Jap'd, Cop'd and Br'd.....gr \$4.00
 Common Sense, Nickel Plated.....gr \$10.00
 Corbin's Daisy, list Feb. 15, 1886.....70¢
 Davis Bronze, Barnes Mfg. Co.....60¢
 Ferguson's.....35¢
 Fish (Liesche's Pat.), No. 100, gr.....35¢
 No. 105, gr.....35¢
 Giant, list Jan. 1892.....70¢
 Hammond's Window Springs.....40¢
 Hugunin's New Sash Locks.....25¢
 Hugunin's Sash Balances.....25¢
 Ives' Patent.....60¢
 Kempshall's Gravity.....60¢
 Kempshall's Model.....60¢
 Monarch.....50¢
 Payson's Perfect.....60¢
 Reading.....60¢
 Security.....70¢
 Universal.....80¢
 Victor.....80¢
 Walker's.....10¢
 Wolcott's.....60¢

Lumber Tools—

Lustro—

Four-ounce bottles.....dos, \$1.75; * gross.....\$17.00

Machines.

Boring—

Without Angers. Upright. Angular.
 Boss, Carpenter's.....3.85
 Boss, Ship Bldrs'.....3.85
 Douglas.....\$5.50 \$6.75.....50¢
 Jennings.....5.50 6.75.....50¢
 Millers Falls.....7.50.....25¢
 Phillips' Patent.....7.00 7.50.....25¢
 with Anger.....7.00 7.50.....25¢
 Snell's, Rice's Pat 5.50 6.75.....40¢

Fluting—

American, 5 in., \$3.00; 6 in., \$3.40; 7 in., \$4.50 each.....35¢
 Combined Fluter and Sad Iron.....35¢
 Crown, 4½ in., \$3.50; 6 in., \$4.00; 8 in., \$6.50 each.....30¢
 Crown Hand Fluter, Nos. 1, \$15.00; 2, \$12.50; 3, \$10.00; 4, \$8.25.....30¢
 Crown Jewel, 6 in.....\$3.50 each, \$1.50 Domestic Fluter.....each, \$1.50
 Eagle, 5½-inch Roll.....\$2.85.....35¢
 Eagle, 5½-inch Roll.....\$2.85.....35¢
 Geneva Hand Fluter, White Metal.....dos \$12.25
 Knox, 4½-inch Rolls.....\$3.25 each (35¢)
 Knox, 6-inch Rolls.....\$3.60 each (35¢)
 Shepard Hand Fluter, No. 85, per doz.....\$15.50.....40¢
 Shepard Hand Fluter, No. 95, * doz.....\$3.00.....40¢
 Shepard Hand Fluter, No. 110, * doz.....\$11.00.....40¢

Hoisting—

Moore's Anti-Friction Differential Pulley Block.....20¢
 Moore's Hand Hoist, with Lock Brake.....20¢
 Moore's Rope Differential Pulley Block.....90¢
 Maris & Beekley (Teal Patent).....30¢
 See also Blocks.

Washing—

Fair and Square.....* doz \$42.00
 Anthony Wayne, * doz, No. 1, \$42; No. 2, \$36; No. 3, \$42.....* doz \$36.00
 Wayne American.....* doz \$54.00
 Welsell.....* doz \$54.00
 Western Star * doz, No. 2, \$36; No. 3, \$39

Mallets—

B. & L. Block Co., Hickory & L. V.....30¢
 Fibre Head, Stearns.....33¢
 Hickory.....20¢
 Lignumvita.....20¢

Mattocks—Regular list.

Standard Fibreware, No. 1, peck * doz, \$3.50; ½ peck, \$3.90

Meat Cutters—

See Cutters, Meat.

Menders, Harness—

Per doz.....\$2.70

Milk Cans—See Cans, Milk.

Mills—

Box and Side, list Jan. 1, 1888.....60¢
 Net prices are often made which are lower than above discount.
 American, Enterprise Mfg. Co., list Jan. 17, 1893.....20¢
 National List, Jan. 1, 1894.....30¢
 Swift, Lane Bros.....30¢
 Wadell's New Box Mills, Ideal Brand, New List.....60¢

Mincing Knives—

See Knives, Mincing.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Out of Season.

Muzzles—

Safety.....* doz, \$3.00, 25¢

Nails—

Cut and Wire. See Trade Report.
 Wire Nails, Papered.
 Association list, May 1, '92.....85¢
 Tack Mfrs.....70¢
 Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos. 6 7 8 9 10
 A. C.....25¢ 23¢ 22¢ 21¢ 21¢
 American.....9¢ 9¢ 9¢ 9¢ 9¢
 Anchor.....23¢ 21¢ 20¢ 19¢ 18¢
 Ausable.....23¢ 22¢ 20¢ 24¢ 23¢
 Capewell.....19¢ 18¢ 17¢ 16¢ 16¢
 C. B. K.....25¢ 23¢ 22¢ 21¢ 21¢
 Champion.....25¢ 23¢ 22¢ 21¢ 20¢
 Champlain.....23¢ 22¢ 20¢ 24¢ 23¢
 Clinton, Fin.....19¢ 17¢ 16¢ 15¢ 14¢
 Empire Bronzed.....13¢
 Essex.....23¢ 22¢ 20¢ 24¢ 23¢
 Lyra.....9¢ 9¢ 9¢ 9¢ 9¢
 Maud S.....23¢ 22¢ 21¢ 21¢
 Northwest'n.....25¢ 23¢ 22¢ 21¢ 20¢
 Putnam.....23¢ 21¢ 20¢ 19¢ 18¢
 Snowden.....9¢ 9¢ 9¢ 9¢ 9¢
 Standard.....23¢ 21¢ 20¢ 19¢ 18¢
 Vulcan.....23¢ 21¢ 20¢ 19¢ 18¢
 Western.....23¢ 21¢ 20¢ 19¢ 18¢

Picture—

Brass Head, Combination list.....50¢
 Brass Head, Sargent's list.....60¢
 Porcelain Head, Combination list.....40¢
 Porcelain Head, Sargent's list.....50¢
 Niles' Patent.....40¢

Nail Pullers—See Pullers, Nail.

Nail Sets—See Sets, Nail.

Nut Crackers—

See Crackers, Nut.

Nuts—List Dec. 18, 1889.

Square, Hex.
 Cold Punched.....5.00¢ 5.10¢ off list
 Hot Pressed.....5.80¢ 6.50¢ off list
 In packages of 100 lb, add 1-10¢ lb, net; in packages less than 100 lb, add ¼¢ lb, net.

Oakum—

Best or Government.....* doz 6¼¢
 Navy.....* doz 5¼¢
 U. S. Navy.....* doz 5¼¢

Oil Tanks—See Tanks, Oil.

Oilers—

Brass and Copper.....50¢
 Zinc and Tin.....50¢
 Broughton's rase.....50¢
 Malleable, Hammers' Old Pattern, same list.....45¢
 Olmstead's Brass and Copper.....50¢
 Olmstead's Tin and Zinc.....50¢
 Prior's Pat. or "Paragon" Zinc.....50¢
 Prior's Pat. or "Paragon" Zinc.....50¢
 Steel, Draper & Williams.....50¢
 Wilmot & Hobbs Mfg. Co., Steel Anti-Rust.....60¢

Openers, Can—

American.....* gross \$1.75; \$2.00
 Domestic, * doz \$2.00.....50¢
 Duplex.....* doz 25¢, 15¢
 Eureka.....* doz \$2.50, 10¢
 Excelsior, No. 1, \$2.50; No. 2, \$1.50.....40¢
 French, No. 4.....* doz \$2.25, 65¢
 Iron Handle, No. 5.....* gr \$6.00, 45¢
 Lymann.....* doz \$3.75, 20¢
 Messenger's Comet.....* doz \$3.00, 25¢
 Moore's.....* doz \$2.75, 30¢
 Sprague, No. 1, 55¢; 2, 60¢; 3, 65¢; * doz \$2.75
 Universal.....* doz \$3.00, 55¢
 World's Best.....* gross, No. 1, \$12.00; No. 2, \$24.00; No. 3, \$36.00.....50¢

Packing, Steam—

Rubber—
 Standard, fair quality.....70¢
 Inferior quality.....75¢
 Extra.....60¢
 Jenkins' Standard, * doz 80¢.....25¢
 N. Y. B. & P. Co., Empire.....40¢
 N. Y. B. & P. Co., Salamander.....25¢
 N. Y. B. & P. Co., Standard.....50¢
 Miscellaneous—
 American Packing.....10¢
 Cotton Packing.....10¢
 Italian Packing.....10¢
 ute.....10¢
 Russia Packing.....10¢

Pails—

S. S. & Co.: 18-qt., \$7.00; 20-qt., \$7.25

* doz.....5¢

Galvanized—

Quarts 10 12 14
 Central Stamping Co.....2.50 2.75 3.00
 Fire Buckets.....2.75 3.25 3.50
 Hills Heavy Weight, * ds.....3.00 3.25 3.75
 Hills Light Weight, * doz.....2.50 3.00 3.25
 Iron Clad.....2.50 2.75 3.00
 Sidney Shepard & Co.....2.50 2.75 3.00
 Buckets—See Well Buckets.

Indurated Fiber Ware

Fire Pails, deep.....* doz \$4.80
 Fire Pails, round bottom.....* doz \$5.40
 Milk, 14 qt.....* doz \$5.40
 Stable, 14 qt.....* doz \$5.00
 Star Pails, 12 qt.....* doz \$4.20

Standard Fiber Ware—

Buggy Pails.....* doz \$3.00
 Chamber Pails, 14 qt.....* doz \$7.00
 Dairy Pails, 14 qt.....* doz 3.75
 Fire Pails, No. 1, 12 qt.....* doz 3.75
 Fire Pails, No. 2, 14 qt.....* doz 4.25
 Horse Pails.....4.00
 Stop Jars (bal. trap).....7.50 8.50
 Sugar Pails.....5.00 5.50
 Water Pails, 12 qt.....* doz 3.15 3.75

Pans—

Large sizes.....* doz 5¢

Small sizes.....* doz 5¢

Silver & Co. (Covered).....40¢

Fry—

No.....* doz \$3.00
 No.....* doz \$3.75
 No.....* doz \$4.25
 No.....* doz 4.75
 No.....* doz 5.25
 No.....* doz \$6.00
 No.....* doz \$7.00
 No.....* doz \$8.00
 No.....* doz \$9.00
 No.....* doz \$10.00
 No.....* doz \$11.00
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 No.....* doz \$90.00
 No.....* doz \$91.00
 No.....* doz \$92.00
 No.....* doz \$93.00
 No.....* doz \$94.00
 No.....* doz \$95.00
 No.....* doz \$96.00
 No.....* doz \$97.00
 No.....* doz \$98.00
 No.....* doz \$99.00
 No.....* doz \$100.00

Dust—

Steel Edge, No. 1.....* doz \$1.75

Roasting and Baking—

Columbian, S. S. & Co.: Nos. 10, \$2; 20, \$2.50; 30, \$2.50 each.....60¢

Paper and Cloth—

Sand and Emery—
 List April 19, 1888.....50¢
 Sibley's Emery and Crocus Cloth.....30¢

Parers—

Apple—

Advance.....* doz \$4.75
 Baldwin.....* doz 5.25
 Bonanza.....* doz 5.00
 Daisy.....* doz 4.00
 Dandy.....* doz 7.50
 Eclipse.....* doz 4.00
 Eureka, 1888.....* doz 16.00
 Family Bay State.....* doz 12.00
 Favorite.....* doz 5.00
 Gold Medal.....* doz 4.00
 Ideal.....* doz 4.00
 Improved Bay State.....* doz 27.00
 Little Star.....* doz 4.50
 Monarch.....* doz 13.50
 New Lightning.....* doz 5.50
 Hoosier.....* doz 4.00
 Penn.....* doz 3.00
 Perfection.....* doz 4.00
 Pomona.....* doz 4.00
 Reading 72.....* doz 4.25
 Reading 78.....* doz 7.00
 Rooking Table.....* doz 6.00
 Turn Table.....* doz 13.50
 Victor.....* doz 4.00
 Waverly.....* doz 4.00
 White Mountain.....* doz 4.00

Potato—

Antrim Combination.....* doz \$5.50
 Hoosier.....* doz \$13.50
 Saratoga.....* doz \$5.50
 White Mountain.....* doz \$4.50

Pencils, Soapstone—

See Crayons.

Pickers, Fruit—

Prize Fruit Pickers.....50¢

Picks—

Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$18.00.....60¢

Picture Nails—

See Nails, Picture.

Pinking Irons—

See Irons, Pinking.

Pins—

Humason, Beekley & Co.'s.....60¢
 Peak, Stow & Co.....50¢
 Sargent & Co.'s, \$17 and \$18.....60¢

Escutcheon—

Brass, list Nov. 11, 1886.....50¢

Pipe, Wrought Iron—

List April 13, 1893.

1½ and under, Plain.....67¢
 1½ and under, Galv.....60¢
 1½ and over, Plain.....67¢
 1½ and over, Galv.....60¢
 Boiler Tubes, list Oct. 24, 1892.....52¢
 Casing, list Nov. 16, 1892.....52¢
 Cold Drawn Seamless Steel Tubing.....50¢
 Inserted Joints Casing, list Nov. 16, 1892.....47¢
 Steel Boiler Tubes.....27¢

Planes and Plane Irons—

Wood Planes—

Molding.....40¢
 Bench, First quality.....45¢
 Bench, Second quality.....50¢
 Bailey's (Stanley R. & L. Co.).....50¢

Iron Planes—

Bailey's (Stanley R. & L. Co.).....50¢
 Birmingham Plane Co.....50¢
 Chapin's Iron Planes.....50¢
 Davis' Iron Planes.....50¢
 Gage Tool Co.'s Self-Setting.....20¢
 Meriden Mal. Iron Co.'s.....50¢
 Miscellaneous Planes (Stanley R. & L. Co.).....25¢
 Sargent's.....60¢
 Standard Tool Co.....50¢
 Steers' Iron Planes.....50¢

Plane Irons—

Auburn Thistle.....30¢
 Buck Bros.....30¢
 Butcher's.....\$5.00
 Ohio.....30¢
 Sandusky.....30¢

Plumbers and Levels—

Regular List.....75¢

Cook's.....40¢
 Davis Inclinometers.....10¢
 Davis Iron Levels.....30¢
 Diston's.....50¢
 Pocket Levels.....70¢
 Stanley's Duplex.....20¢
 Stanley's Handy.....20¢

Pokers, Animal—

Bishop's American.....* doz \$2.85
 Bishop's I. X. L.....* doz \$5.75
 Bishop's Steel Monarch.....* doz \$4.50
 Bishop's Ohio.....* doz \$4.75
 Bishop's Pioneer.....* doz \$3.50
 Bolding.....* doz \$6.00
 Buckeye, Single Stale.....* doz \$2.75
 Eagle, Double Stale.....* doz \$5.75
 Eagle, Single Stale.....* doz \$3.75
 Metallic Horse Foke.....* doz \$5.00

Police Goods—

Daley's Improved Handcuffs; 2 Hands, Polished, * doz, \$48.00; Nickel, \$57.00; 3 Hands, Polished, * doz, \$72.00; Nickel, \$84.00.....25¢
 J. P. Lovell's Police Goods.....25¢
 Newhall Ship Chandlery Co., Handcuffs, \$15.00 * doz.....25¢
 Tower's.....25¢

Polish—

Gaston's Silver Compound.....33¢
 Prestoline.....30¢
 Prestoline, Paste.....35¢
 Tanite Mills.....* gr. \$14.40
 Paste, ½ lb tins.....* gr. \$36.00
 Liquid, ½ pint.....* gr. \$36.00
 Powder, 1 lb.....* gr. \$36.00

Stove

Black Eagle Benzine Paste, 5 and 10 lb cans.....12¢
 Black Eagle Benzine Paste, 5 and 10 lb cans.....12¢
 Black Flag, 5 and 10 lb pails.....* gr \$2.50
 Black Flag, Liquid, in bottles, * gr \$1.00
 Black Jack Water Paste, 5 and 10 lb cans.....12¢
 Bonnell's Liquid Stove Polish, * gr \$9.00
 Bonnell's Paste Stove Polish, * gr \$9.00
 Boynton's Noon Day.....* gr \$13.00
 Crown Paste.....* gr \$7.50
 Crown Paste in 5 and 10 lb pails, 10 lb Diamond O. K. Enamel.....* gr \$19.00
 Diamond Rock Nickel Cleaner.....* gr \$10.20
 Joseph Dixon's.....* gr \$10.20
 Dixon's Plumb.....* gr \$10.20
 Fireline.....* gr \$2.50
 Gem.....* gr \$4.50
 Gold Medal.....* gr \$6.00
 Japanese.....* gr \$3.50
 Jet Black.....* gr \$3.50
 Lustr.....* gr \$4.75
 Nickel Plate Paste.....* gr \$9.00
 Parlor Pride Stove Enamel, * gr \$9.00
 Raven Liquid, 8 oz. bottles.....* gr \$8.00
 Raven Paste in 5 lb. pails (cases of 10), 8 pails.....* gr \$9.00
 Raven Water Polish, large boxes.....* gr \$7.20
 Rising Sun, 5 gr lots.....* gr \$5.50
 Ruby.....* gr \$8.75
 Yates' Liquid.....* gr \$5.00
 Yates Standard Paste Polish, 10 lb cans.....* gr \$12.50

Poppers, Corn—

Round or Square,
 1 qt.....* doz \$1.00; * gr \$8.00
 1½ qt.....* doz \$1.50; * gr \$9.00
 2 qt.....* doz \$1.50; * gr \$14.00

Post Hole and Tree Augers and Diggers—

See Diggers, Post Hole, &c.

Potato Parers—

Snaps, Harness, &c.

Anchor & S. Mfg. Co. 50¢
 Andrews' 60¢
 Cover's Saddlery Works' Triumph 35¢
 Covered Springs 60¢
 Covert 60¢
 Covert, New Patent 60¢
 Covert, New R. E. 60¢
 Fitch's 60¢
 German, new list 40¢
 Hitchkiss 10¢
 Kelley & Woolworth's Steel Harness 50¢

John Prots Snaps 50¢
 Sargent's Patent Guarded 70¢

Snaths

Scythe 50¢

Soldering Irons

See *Iron, Soldering*

Spittoons, Cuspidors, &c.

Standard Fiberglass 40¢

Cuspidors, 8 1/2 inch, No. 1, 4; 10 and 11 inch, 50¢

Spoke Shaves 50¢

See *Shavers, Spoke*

Spoke Trimmers 50¢

See *Trimmers, Spoke*

Spoons and Forks

Tinned Iron 70¢

Basting, Cen. Stamp, Co. list 35¢

Buffalo & Co. 50¢

Solid Table and Tea, Cen. Stamp, Co.'s list 70¢

Silver Plated 40¢

4 months or 65 cash 30 days: 50¢

L. Boardman & Son 50¢

Holmes & Edwards Silver Co. 40¢

Meriden & Co., Rogers 40¢

Need & Barton 40¢

Rogers & Bros. 40¢

C. Rogers & Bros. 40¢

Rogers & Hamilton 40¢

Wm. Rogers Mfg. Co. 40¢

Simpson, Hall, Miller & Co. 40¢

Miscellaneous 40¢

Boardman's Britannia Spoons, case 60¢

Boardman's Nickel Silver, list July 1, 1891 60¢

Britannia 60¢

German Silver 60¢

Nickel Silver 60¢

Holmes & Edwards Silver Co. 60¢

No. 24 German Silver 60¢

No. 30 Silver Metal 60¢

No. 49 Nickel Silver 60¢

No. 50 Nickel Silver 60¢

No. 67 Mexican Silver 60¢

Rogers & Hamilton 40¢

Cimeter, Flatware 40¢

Cimeter, Steel Goods 40¢

Crown Hamilton, Flatware and Cutlery 30¢

Steel Goods 40¢

Wm. Rogers Mfg. Co. 40¢

18 Rogers' German Silver 60¢

22 Rogers' Nickel Silver 60¢

Rogers' Silver Metal 60¢

Spring 50¢

Door 60¢

Champion (Coll.) 60¢

Cowell's, No. 1, No. 2, No. 3, No. 4, No. 5, No. 6, No. 7, No. 8, No. 9, No. 10, No. 11, No. 12, No. 13, No. 14, No. 15, No. 16, No. 17, No. 18, No. 19, No. 20, No. 21, No. 22, No. 23, No. 24, No. 25, No. 26, No. 27, No. 28, No. 29, No. 30, No. 31, No. 32, No. 33, No. 34, No. 35, No. 36, No. 37, No. 38, No. 39, No. 40, No. 41, No. 42, No. 43, No. 44, No. 45, No. 46, No. 47, No. 48, No. 49, No. 50, No. 51, No. 52, No. 53, No. 54, No. 55, No. 56, No. 57, No. 58, No. 59, No. 60, No. 61, No. 62, No. 63, No. 64, No. 65, No. 66, No. 67, No. 68, No. 69, No. 70, No. 71, No. 72, No. 73, No. 74, No. 75, No. 76, No. 77, No. 78, No. 79, No. 80, No. 81, No. 82, No. 83, No. 84, No. 85, No. 86, No. 87, No. 88, No. 89, No. 90, No. 91, No. 92, No. 93, No. 94, No. 95, No. 96, No. 97, No. 98, No. 99, No. 100, No. 101, No. 102, No. 103, No. 104, No. 105, No. 106, No. 107, No. 108, No. 109, No. 110, No. 111, No. 112, No. 113, No. 114, No. 115, No. 116, No. 117, No. 118, No. 119, No. 120, No. 121, No. 122, 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No. 678, No. 679, No. 680, No. 681, No. 682, No. 683, No. 684, No. 685, No. 686, No. 687, No. 688, No. 689, No. 690, No. 691, No. 692, No. 693, No. 694, No. 695, No. 696, No. 697, No. 698, No. 699, No. 700, No. 701, No. 702, No. 703, No. 704, No. 705, No. 706, No. 707, No. 708, No. 709, No. 710, No. 711, No. 712, No. 713, No. 714, No. 715, No. 716, No. 717, No. 718, No. 719, No. 720, No. 721, No. 722, No. 723, No. 724, No. 725, No. 726, No. 727, No. 728, No. 729, No. 730, No. 731, No. 732, No. 733, No. 734, No. 735, No. 736, No. 737, No. 738, No. 739, No. 740, No. 741, No. 742, No. 743, No. 744, No. 745, No. 746, No. 747, No. 748, No. 749, No. 750, No. 751, No. 752, No. 753, No. 754, No. 755, No. 756, No. 757, No. 758, No. 759, No. 760, No. 761, No. 762, No. 763, No. 764, No. 765, No. 766, No. 767, No. 768, No. 769, No. 770, No. 771, No. 772, No. 773, No. 774, No. 775, No. 776, No. 777, No. 778, No. 779, No. 780, No. 781, No. 782, No. 783, No. 784, No. 785, No. 786, No. 787, No. 788, No. 789, No. 790, No. 791, No. 792, No. 793, No. 794, No. 795, No. 796, No. 797, No. 798, No. 799, No. 800, No. 801, No. 802, No. 803, No. 804, No. 805, No. 806, No. 807, No. 808, No. 809, No. 810, No. 811, No. 812, No. 813, No. 814, No. 815, No. 816, No. 817, No. 818, No. 819, No. 820, No. 821, No. 822, No. 823, No. 824, No. 825, No. 826, No. 827, No. 828, No. 829, No. 830, No. 831, No. 832, No. 833, No. 834, No. 835, No. 836, No. 837, No. 838, No. 839, No. 840, No. 841, No. 842, No. 843, No. 844, No. 845, No. 846, No. 847, No. 848, No. 849, No. 850, No. 851, No. 852, No. 853, No. 854, No. 855, No. 856, No. 857, No. 858, No. 859, No. 860, No. 861, No. 862, No. 863, No. 864, No. 865, No. 866, No. 867, No. 868, No. 869, No. 870, No. 871, No. 872, No. 873, No. 874, No. 875, No. 876, No. 877, No. 878, No. 879, No. 880, No. 881, No. 882, No. 883, No. 884, No. 885, No. 886, No. 887, No. 888, No. 889, No. 890, No. 891, No. 892, No. 893, No. 894, No. 895, No. 896, No. 897, No. 898, No. 899, No. 900, No. 901, No. 902, No. 903, No. 904, No. 905, No. 906, No. 907, No. 908, No. 909, No. 910, No. 911, No. 912, No. 913, No. 914, No. 915, No. 916, No. 917, No. 918, No. 919, No. 920, No. 921, No. 922, No. 923, No. 924, No. 925, No. 926, No. 927, No. 928, No. 929, No. 930, No. 931, No. 932, No. 933, No. 934, No. 935, No. 936, No. 937, No. 938, No. 939, No. 940, No. 941, No. 942, No. 943, No. 944, No. 945, No. 946, No. 947, No. 948, No. 949, No. 950, No. 951, No. 952, No. 953, No. 954, No. 955, No. 956, No. 957, No. 958, No. 959, No. 960, No. 961, No. 962, No. 963, No. 964, No. 965, No. 966, No. 967, No. 968, No. 969, No. 970, No. 971, No. 972, No. 973, No. 974, No. 975, No. 976, No. 977, No. 978, No. 979, No. 980, No. 981, No. 982, No. 983, No. 984, No. 985, No. 986, No. 987, No. 988, No. 989, No. 990, No. 991, No. 992, No. 993, No. 994, No. 995, No. 996, No. 997, No. 998, No. 999, No. 1000, No. 1001, No. 1002, No. 1003, No. 1004, No. 1005, No. 1006, No. 1007, No. 1008, No. 1009, No. 1010, No. 1011, No. 1012, No. 1013, No. 1014, No. 1015, No. 1016, No. 1017, No. 1018, No. 1019, No. 1020, No. 1021, No. 1022, No. 1023, No. 1024, No. 1025, No. 1026, No. 1027, No. 1028, No. 1029, No. 1030, No. 1031, No. 1032, No. 1033, No. 1034, No. 1035, No. 1036, No. 1037, No. 1038, No. 1039, No. 1040, No. 1041, No. 1042, No. 1043, No. 1044, No. 1045, No. 1046, No. 1047, No. 1048, No. 1049, No. 1050, No. 1051, No. 1052, No. 1053, No. 1054, No. 1055, No. 1056, No. 1057, No. 1058, No. 1059, No. 1060, No. 1061, No. 1062, No. 1063, No. 1064, No. 1065, No. 1066, No. 1067, No. 1068, No. 1069, No. 1070, No. 1071, No. 1072, No. 1073, No. 1074, No. 1075, No. 1076, No. 1077, No. 1078, No. 1079, No. 1080, No. 1081, No. 1082, No. 1083, No. 1084, No. 1085, No. 1086, No. 1087, No. 1088, No. 1089, No. 1090, No. 1091, No. 1092, No. 1093, No. 1094, No. 1095, No. 1096, No. 1097, No. 1098, No. 1099, No. 1100, No. 1101, No. 1102, No. 1103, No. 1104, No. 1105, No. 1106, No. 1107, No. 1108, No. 1109, No. 1110, No. 1111, No. 1112, No. 1113, No. 1114, No. 1115, No. 1116, No. 1117, No. 1118, No. 1119, No. 1120, No. 1121, No. 1122, No. 1123, No. 1124, No. 1125, No. 1126, No. 1127, No. 1128, No. 1129, No. 1130, No. 1131, No. 1132, No. 1133, No. 1134, No. 1135, No. 1136, No. 1137, No. 1138, No. 1139, No. 1140, No. 1141, No. 1142, No. 1143, No. 1144, No. 1145, No. 1146, No. 1147, No. 1148, No. 1149, No. 1150, No. 1151, No. 1152, No. 1153, No. 1154, No. 1155, No. 1156, No. 1157, No. 1158, No. 1159, No. 1160, No. 1161, No. 1162, No. 1163, No. 1164, No. 1165, No. 1166, No. 1167, No. 1168, No. 1169, No. 1170, No. 1171, No. 1172, No. 1173, No. 1174, No. 1175, No. 1176, No. 1177, No. 1178, No. 1179, No. 1180, No. 1181, No. 1182, No. 1183, No. 1184, No. 1185, No. 1186, No. 1187, No. 1188, No. 1189, No. 1190, No. 1191, No. 1192, No. 1193, No. 1194, No. 1195, No. 1196, No. 1197, No. 1198, No. 1199, No. 1200, No. 1201, No. 1202, No. 1203, No. 1204, No. 1205, No. 1206, No. 1207, No. 1208, No. 1209, No. 1210, No. 1211, No. 1212, No. 1213, No. 1214, No. 1215, No. 1216, No. 1217, No. 1218, No. 1219, No. 1220, No. 1221, No. 1222, No. 1223, No. 1224, No. 1225, No. 1226, No. 1227, No. 1228, No. 1229, No. 1230, No. 1231, No. 1232, No. 1233, No. 1234, No. 1235, No. 1236, No. 1237, No. 1238, No. 1239, No. 1240, No. 1241, No. 1242, No. 1243, No. 1244, No. 1245, No. 1246, No. 1247, No. 1248, No. 1249, No. 1250, No. 1251, No. 1252, No. 1253, No. 1254, No. 1255, No. 1256, No. 1257, No. 1258, No. 1259, No. 1260, No. 1261, No. 1262, No. 1263, No. 1264, No. 1265, No. 1266, No. 1267, No. 1268, No. 1269, No. 1270, No. 1271, No. 1272, No. 1273, No. 1274, No. 1275, No. 1276, No. 1277, No. 1278, No. 1279, No. 1280, No. 1281, No. 1282, No. 1283, No. 1284, No. 1285, No. 1286, No. 1287, No. 1288, No. 1289, No. 1290, No. 1291, No. 1292, No. 1293, No. 1294, No. 1295, No. 1296, No. 1297, No. 1298, No. 1299, No. 1300, No. 1301, No. 1302, No. 1303, No. 1304, No. 1305, No. 1306, No. 1307, No. 1308, No. 1309, No. 1310, No. 1311, No. 1312, No. 1313, No. 1314, No. 1315, No. 1316, No. 1317, No. 1318, No. 1319, No. 1320, No. 1321, No. 1322, No. 1323, No. 1324, No. 1325, No. 1326, No. 1327, No. 1328, No. 1329, No. 1330, No. 1331, No. 1332, No.

Whips

American Whip Co.	Length.	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8 ft.
X. L. Whalebone Driving.....	\$18.00	20.00	22.00	24.00	27.00	30.00	38.00	36.00	
Bureka, Two-thirds Whalebone.....		15.00	16.50	18.00	20.00				
Bull Bone, Half-length Whalebone.....									
American Standard.....	8.00	8.50	11.00	12.00	18.00	15.00			
True Grip, Raw Hide Center.....	6.00	6.00	6.50	7.00	7.50	9.00	15.00	16.50	
New Name, Stocked Java, Black and Wine Colors.....									
Americus, 93 Pen Whip.....									
Gents' Light Driving No. 111.....									
Gents' Light Driving No. 100.....									
Hand-made Stocked Java No. 103.....			8.75	4.00					
A large variety of cheaper grades.....									
Team Whips.....									
Toy Whips.....									
Hardware Assortment, 10/American, 75 Whips for \$50.00.									

Wire and Wire Goods—

Iron—

Market.

Br. & Ann. Nos. 0 to 18.....	Extra 50¢ to 100¢
75¢ to 10¢ 75¢ to 10¢ 25¢	often given
Cop'd, Nos. 0 to 18.....	and low net
Galv., Nos. 0 to 18.....	prices often
70¢ to 70¢ 10¢	made on
Tin'd, Tin'd Nos. 0 to 18.....	large lots.
70¢ to 70¢ 10¢	

Stone, Br. and Ann'd, Nos. 16 to 18.....	80%
Nos. 19 to 25.....	80% to 85%
Nos. 27 to 35.....	82% to 85%
Ann'd Wire on Spools.....	60%
Brass, list Jan. 18, 1894.....	40% to 45%
Cast Steel Wire.....	60%
Copper, list Jan. 18, 1894.....	40% to 45%
Galvanized Fence.....	75% to 80%
Mallin's Ann'd & Tin'd on Spools.....	60% to 65%
Mallin's Brass and Cop. on Spools.....	60% to 65%
Ossawan Mills, Ann'd and Tinned on Spools.....	60% to 65%

Ossawan Mills, Brass and Copper on Spools.....	50¢ to 100¢
Steel Music Wire, 12 to 30, imported.....	60¢ to 70¢
Stubs' Steel Wire.....	\$6.00 to 2.30¢
Tate's Spooled, Tin'd & Annealed.....	50%
Tate's Spooled Cop. and Brass.....	50%
Tinned Broom Wire, 18 to 21, # D.....	40¢ to 45¢
Wire Clothes Line, see Lines.....	
Wire Picture Cord, see Cord.....	

Bright Wire Goods—

Standard list..... 85¢ to 10¢ to 90%

Wire Cloth and Netting—

Galvanized Wire Netting..... 80¢ to 80¢ to 10¢

Painted Screen Cloth 100 ft. \$1.45 to \$1.50

Wire Barb—

See Trade Report.

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable..... 40%

Baxter's Adjustable "S"..... 40% to 50%

Baxter's Diagonal..... 80%

Coe's Genuine..... 50% to 60%

Coe's "Macchans"..... 50% to 60%

Girard Standard..... 55% to 70%

Lamson & Sessions' Engineers'..... 60% to 10%

Lamson & Sessions' Standard..... 70% to 10%

Girard Agricultural..... 75% to 80%

Lamson & Sessions' Agric'l..... 75% to 80%

P. S. & W. Agricultural..... 75% to 80%

W. & B. Diamond..... 75% to 80%

Acme, Bright.....	50¢ to 25¢
Acme, Nickle.....	40¢ to 25¢
Allen's Pocket (Bright).....	\$6.00, 50¢ to 10¢
Aligator.....	50%
Always Ready.....	25¢ to 55¢
Bemis & Call's.....	
Brigg's Pattern.....	80% to 10%
Cylinder or Gas Pipe.....	45¢ to 55¢
Merrick's Pattern.....	55%
No. 3 Pipe.....	55%
Pat. Combination Black.....	40% to 10%
Pat. Combination Bright.....	40% to 10%
Boardman's.....	30%
Cincinnati Brace Wrenches.....	25% to 10%
Diamond Steel.....	20% to 10%
Donohue's Engineer.....	50% to 10%
Eagle.....	70% to 55%
Hercules.....	55% to 10%
Taft's Vise Wrench.....	\$4.00, \$4.00, 40%
The Favorite Pocket.....	55% to 35%
Walker's.....	55% to 35%
Webster's Pat. Combination.....	25%

Wringers, Clothes—

Am. Wringer Co.'s list, July 1, 1893.....	2% cash
Colby Wringer Co., list Sept. 1, '91.....	2% cash
Lovell Mfg. Co., list July 1, 1892.....	2% cash
Peerless Mfg. Co., list Feb. 1, 1892.....	2% cash
National Wringer & Mfg. Co., list June 1, 1892.....	2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1894..... 85¢ to 85¢ to 10¢

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw, per gal.....	52	@	54
Linseed, City, boiled.....	55	@	57
Linseed, Western, raw.....	52	@	54
Lard, City, Extra Winter.....	65	@	66
Lard, City, Prime.....	65	@	66
Lard, City, Extra No. 1.....	50	@	50
Lard, City, No. 1.....	45	@	45
Lard, Western, prime.....	70	@	70
Cotton-seed, Crude, prime.....	28	@	28
Cotton-seed, Crude, off grades.....	25	@	27
Cotton-seed, Summer Yellow, prime.....	33	@	33
Cotton-seed, Summer Yellow, off grades.....	31	@	32
Sperm, Crude.....	62	@	62
Sperm, Natural Spring.....	68	@	68
Sperm, Bleached Spring.....	68	@	70
Sperm, Natural Winter.....	68	@	70
Sperm, Bleached Winter.....	73	@	75
Whale, Crude.....	44	@	45
Whale, Natural Winter.....	44	@	45
Whale, Bleached Winter.....	47	@	48
Whale, Extra Bleached.....	47	@	50
Sea Elephant, Bleached.....	47	@	50
Winter.....	32	@	32
Menhaden, Crude, Sound.....	32	@	32
Menhaden, Crude, Southern.....	36	@	38
Menhaden, Light Pressed.....	41	@	42
Menhaden, Bleached Winter.....	44	@	45
Menhaden, Extra Bleached.....	44	@	50
Tallow, City, prime.....	48	@	48
Tallow, Western, prime.....	48	@	48
Cocoanut, Ceylon.....	54	@	54
Cocoanut, Cochiti.....	64	@	64
Cod, Domestic.....	38	@	40
Cod, Foreign.....	42	@	45
Red Elaine.....	35	@	38
Red Saponified.....	44	@	5
Bank.....	38	@	38
Straits.....	39	@	39
Olive, Italian, bbls.....	58	@	62
Neatsfoot, prime.....	60	@	65
Palm, prime, Lagos.....	54	@	6

Mineral Oils—

Black, 20 gravity, 25 @ 30 cold test.....	7	@	74
Black, 20 gravity, 16 cold test.....	74	@	8
Black, 20 gravity, summer.....	74	@	84
Cylinder light, filtered.....	14	@	16

Cylinder, dark, filtered.....	10	@	13
Paraffine, 23 1/2 @ 24 gravity.....	10	@	11
Paraffine, 25 gravity.....	10	@	11
Paraffine, 28 gravity.....	74	@	8
Paraffine, red.....	84	@	104

Paints and Colors—

Barytes, Foreign, 10 ton.....	\$22.00	@	24.00
Barytes, Amer. floated.....	20.00	@	22.00
Barytes, Amer. No. 1.....	16.00	@	18.00
Barytes, Amer. No. 2.....	13.00	@	15.00
Barytes, Amer. No. 3.....	11.00	@	12.00
Blue, Celestial.....	40	@	50
Blue, Chinese.....	25	@	40
Blue, Prussian.....	8	@	25
Blue, Ultramarine.....	8	@	25
Brown, Spanish.....	4	@	1
Brown, Vandyke, Amer.....	3	@	34
Brown, Vandyke, English.....	6	@	8
Carmine, No. 40, in bulk.....	2.75	@	5
Carmine, No. 40, in boxes or barrels.....	2.85	@	5
Carmine, No. 40, in ounce bottles.....	3.75	@	5
Chalk, in bulk.....	1.75	@	2.00
Chalk, in bbls., 100 lb.....	35	@	40
China Clay, English.....	13.00	@	18.00
Cobalt Oxide, prep'd.....	9.00	@	11.00
Cobalt Oxide, black.....	1.90	@	1.90
Cobalt Oxide, black.....	1.90	@	1.90
Green, Paris, in bulk.....	1.00	@	104
Green, Paris, 170 @ 175 lb.....	104	@	11
Green, Paris, small pack.....	12	@	17
Green, Chrome, ordinary.....	6	@	12
Green, Chrome, pure.....	22	@	25
Lead, Eng., B.E. white.....	7	@	8
Lead, Amn. White, dry or in Kegs, lots less than 500 lb.....	64	@	64
Kegs, lots 500 lb to 5 tons.....	54	@	6
Kegs, lots 5 tons to 12 tons.....	54	@	54
Kegs, lots 12 tons and over.....	54	@	54
Lead White, in oil, 25 lb tin pails, add to keg price.....	14	@	14
Lead White, in oil, 12 lb tin pails, add to keg price.....	14	@	14
Lead White, in oil, 1 to 5 lb as sorted tins, add to keg price.....	24	@	24
Lead Red, bbls. and 1/2 bbls.....	54	@	64
Lead Red, Kegs.....	64	@	64
Litharge, Kegs.....	54	@	64
Litharge, bbls. and 1/2 bbls.....	54	@	64

TERMS, &c.—Lead and Litharge.—On lots of 500 lb or over, 60 days' time or 2% discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	14
Ocher, French Washed.....	14	@	24
Ocher, German Washed.....	14	@	24
Ocher, American.....	14	@	24
Orange Mineral, English.....	84	@	9
Orange Mineral, French.....	10	@	104
Orange Mineral, German.....	84	@	9
Orange Mineral, American.....	84	@	84
Paris White, English Chloride.....	1.00	@	1.15
Paris White, American.....	65	@	75
Red, Indian, English.....	64	@	7
Red, Indian, American.....	2	@	64
Red, Turkey.....	9	@	14
Red, Tuscan.....	9	@	11
Red, Venetian, American.....	1.00	@	1.10
Red, Venetian, English.....	1.20	@	1.35
Sienna, Italian, Burnt and Powder.....	4	@	5
Sienna, Ital., Burnt Lumps.....	14	@	34
Sienna, Ital., Raw, Powder.....	44	@	54
Sienna, Ital., Raw, Lumps.....	14	@	34
Sienna, American, Raw.....	14	@	14
Sienna, American, Burnt and Powdered.....	14	@	14
Talc, French.....	14	@	14
Talc, American.....	14	@	14
Terra Alba, "Ch," 100 lb.....	95	@	1.25
Terra Alba, English.....	70	@	80
Terra Alba, American No. 1.....	65	@	75
Terra Alba, American No. 2.....	45	@	50
Umber, Turkey, Burnt and Powdered.....	84	@	4
Umber, Turkey Bnt. Ln.....	24	@	3
Umber, Turkey, Raw and Powdered.....	34	@	4
Umber, Turkey, R'w Lumps.....	24	@	24
Umber, Turkey, Bnt. Amer.....	14	@	14
Umber, Turkey, R'w Amer.....	14	@	14
Yellow, Chrome.....	10	@	25
Vermilion, American Lead.....	11	@	12
Vermilion, Quicksilver, bulk.....	43	@	43
Vermilion, Quicksilver, bags.....	44	@	44
Vermilion, Quicksilver sm'r pks.....	52	@	52
Vermilion, English Import.....	80	@	85
Vermilion, Imitation, Eng.....	8	@	30
Vermilion, Trieste.....	90	@	924
Vermilion, Chinese.....	924	@	924
Whiting, Common, 100 lb.....	374	@	424
Whiting, Gliders.....	45	@	55

Zinc, American, dry.....	84	@	44
Zinc, French, Red Seal.....	74	@	74
Zinc, French, Green Seal.....	9	@	7
Zinc, French, V. M. X.....	74	@	74
Zinc, Antwerp, Red Seal.....	74	@	74
Zinc, Antwerp, Green Seal.....	74	@	74
Zinc, German, L. Z. O.....	64	@	74
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	104	@	114
lots less than one ton.....	11	@	114
Zinc, V. M. in Poppy Oil, Red Seal.....	10	@	104
lots of 1 ton and over.....	10	@	104
lots of less than 1 ton.....	104	@	104
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1 1/2 @ 25 bbls., 2 1/2 @ 50 bbls. 4¢. No discount allowed on less than bbl. lots.			

Colors in Oil—

Black, Drop, Frankfurt.....	25	@	30
Black, Drop, English.....	12	@	15
Black, Drop, Domestic.....	7	@	10
Black, Lampblack, Best.....	20	@	35
Black, Lampblack, Common.....	7	@	13
Black, Ivory.....	8	@	15
Blue, Chinese.....	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramarine.....	12	@	18
Brown, Vandyke.....	7	@	13
Green, Chrome.....	8	@	13
Green, Paris.....	18	@	134
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber, Raw.....	7	@	10
Umber, Burnt.....	7	@	10

Putty—

In barrels and 1/2 bbls.....	.014	@	.014
In tubs.....	.014	@	.014
In tin cans.....	.014	@	.024
In bladders.....	.014	@	.024

Spirits Turpentine—

In regular bbls.....	304	@	304
In machine bbls.....	31	@	31

Glue—

Low Grade.....	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	22
English.....	10	@	15
Irish.....	12	@	12

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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Monthly Edition: \$1.25 = 5/ = 6 1/4 francs = 5 marks = 3 florins = 1 1/2 roubles (coin) = 6 1/4 lire = 5 pesetas.	

RATES OF ADVERTISING: ONE SQUARE (12 LINES, ONE INCH).

ONE INSERTION	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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MARCH 14, 1894:

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

Stove Plate Scrap	gross ton	4.
Burr t Iron	gross ton	8.

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